COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

Volume 21 NEW YORK, THURSDAY, FEBRUARY 23, 1922 Number 8

No Bridges Burned at Indianapolis

FARRINGTON and Howat defeated and the moderate terms of the scale committee's report seriously modified—what is the portent of the imbroglio at Indianapolis? Is a large section of the miners so obsessed with a false sense of power that it will fly in the face of fate and, in this of all years, seriously attempt to force through such a radical step as a six-hour day and a five-day week? In other words, are the miners really bent on wrecking either their own organization or the coal industry?

We think not. If one gets the proper perspective on last week's convention of the United Mine Workers he sees behind the noise made by the unholy alliance of Farrington's forces with those of Howat and discerns a serious-minded gathering bent on getting itself out of a deep hole. The officials of the miners' union are not fools. They see the handwriting on the wall; they know that coal miners' wages must be reduced.

The great problem of Lewis and his administration this year is to hold the organization together. Many there are who prophesy that the United Mine Workers cannot live through adversity, that the union will crumble under the strain of reversal. To organize the retreat and maintain morale is the task. That is why even while tearing up the earth on the convention floor, the Farrington men were preaching moderation and talking unity among the delegates outside the convention. The delegates have taken home with them a definite feeling of the seriousness of the situation and a knowledge of actual conditions that will have its effect should the proposed referendum on a strike be taken.

A miners' convention without a scrap would not be worth the time of the delegates. From all accounts none was disappointed this year. Farrington, intent on the overthrow of Lewis, hurled the Howat monkey wrench into the machine and for five days there was excitement enough for the most blasé. The deposed Kansas leader had no case. That he made the fuss he did was due entirely to the support afforded by the Illinois leader, actuated not by any feeling of sympathy for Howat but as a means of embarrassing Lewis.

The scale committee reported early Tuesday morning, the first day of the convention. It traveled old familiar ground in many respects, calling for punitive overtime, weekly pay days, abolition of the automatic penalty clause and the two-year contract. By calling for no reduction in wages in the soft-coal fields it virtually announced that the miners are ready to negotiate for the least reduction they can get. Since they could hardly have been expected to "demand" a reduction, the original scale must be held to have been moderate indeed. Until Saturday afternoon, the last session of the convention, there was no expectation that the scale committee report would be debated or that there would be a serious attempt to amend it. But that was before the Farrington faction was defeated in its effort to overrule Lewis in his determination to keep Howat out.

The amendments to the demands, notably that changing the original demand for "eight hours underground" to that for a six-hour day five days a week, were a final triumph not so much for the radicals as for the anti-Lewis faction. The rebels, defeated by the narrow margin of 121 votes in the roll call on Friday, attacked the administration program because they just naturally would not stop fighting.

A majority of the union miners do not want a strike. They have provided that should no agreement be reached with the operators prior to April 1, they will take a referendum on whether they will go out or keep at work, and they have set up a policy committee in which they have placed wide powers. Since they are headed backward they have been careful not to burn any bridges. Given half a chance this policy committee can, and quite possibly will, steer clear of calling a strike in the bituminous fields. The hard-coal men are in a different mood.

As for the public, whose support the miners fain would have, the radical demand for the six-hour day and five-day week will overshadow the otherwise moderate claims of the union. So absurd is that demand, and so impossible of attainment, that Farrington's folly in forcing it on the convention will prove costly to them.

ON ONE GENERAL GROUND the miners and operators will meet in harmony of desire—that "inequitable differentials between districts, unfair working conditions and internal differences, wherever existing, be adjusted upon a fair and satisfactory basis." It is to remedy just such inequalities that the several operators' groups in the old Central Competitive Field have elected to go their own way this year, rather than follow the traditional interstate settlements. Both sides desire modification of local character in wage differentials and working conditions, but the desires are not parallel. It will be recalled that these questions were forced to the front by the union officers of the respective districts in the hearing before the Robinson commission and that that commission made no finding in respect to them. Instead it was recommended that these questions, because "technical and complex in their nature" and because "their determination may be expected to affect materially competitive relations as between operators and the relative earnings as between mine workers," should be referred to special commissions with proper staffs of technically trained men. This part of the award and recommendation of the President's Bituminous Coal Commission has been ignored. Five items were then listed as deserving of special consideration: the machine differential in Indiana, the differential between thick and thin veins

in Pittsburgh, the 7c. machine differential in Illinois, the tonnage differentials in southern Illinois, and the discontinuance of the check-off. These and other questions will thus now be given the delayed consideration which is their due, but by separate and not interstate negotiations.

IN HIS LATEST BILL, providing for the setting up of a "National Coal Mining Board" to adjudicate labor disputes, Senator Kenyon states as axiomatic: "Coal is a public necessity, and in its production and distribution the public interest is predominant."

This is far from being a truism. Of bituminous coal one-third is taken by general industry and is no more essential than other raw materials as iron, steel, copper, cotton, wool and many other things. More gas for cities is made from oil than from coal. Lubricants are with coal equally essential to the operation of all forms of transportation.

What the Senator and others who make the broad claim that coal is charged with public interest have in mind is the coal that goes to the householder. About 15 per cent of the total output of bituminous and 60 per cent of anthracite falls in this category.

Repair-Shop Economics

WITHOUT a well-equipped repair shop mines cannot be kept in steady operation. Every mine must have some provision for the making of repairs, but the type of shop maintained and the character of repairs attempted vary widely from mine to mine. The facilities at small mines and sometimes at even larger ones are mere makeshifts rather than adequate plants. In rare cases, however, a machine shop is provided that is adequately equipped to take care of the needs of the mine which it serves. However, for the failure to make such provision there are sometimes more or less satisfactory reasons.

When any piece of equipment needs repairing, so many operations have to be performed on it that a number of machines are necessary, and, as the cost of these is high, the operator naturally questions whether it is well to attempt what can be accomplished satisfactory only at great expense. If provision is to be made for all the repairs needed at a mine producing 500 tons a day, for instance, a machine shop capable of making all the repairs at a 5,000-ton plant must be provided. For this reason the operator hesitates to build a completely equipped shop, and such repair shops are therefore uncommon.

Reliance is thus often placed on local repair shops which do the work for several mine establishments. Thus though some mines have real repair shops, others have a mere blacksmithy with more or less general repair equipment. In addition to these, wherever there are locomotives there are locomotive barns with some machine equipment and electric repair and car shops with facilities of varying completeness. It is of the general repair shop that I desire to speak.

When a company operates a number of mines scattered over a large territory, it is hardly feasible to maintain individual shops at each development because of the duplication of machines and repair parts. There are times, however, when this is done because the mines are too widely separated to permit of centralization. When the mines of any company are closely grouped the owner can take advantage of that fact and have a central shop in which repairs can be made in the most efficient manner, yet with minimum investment and overhead charges. In that event an elaborately equipped shop may be maintained, capable of doing all kinds of work, and a complete stock of repair parts may be kept on hand at all times.

The expense for labor in a shop at a small mine is as excessive as the cost of building and equipment. Where repairs are performed at the mine, a machine boss with one or more helpers is required. At times repair jobs are few, and the men employed must busy themselves looking for something to do. At other periods they are laboring overtime and on Sundays. This state of affairs is, of course, by no means conducive to efficiency. When several mines are grouped, however, the amount of repair work to be performed fluctuates but little throughout the year, for when one of the mines in the group has a number of repair jobs, another may have none.

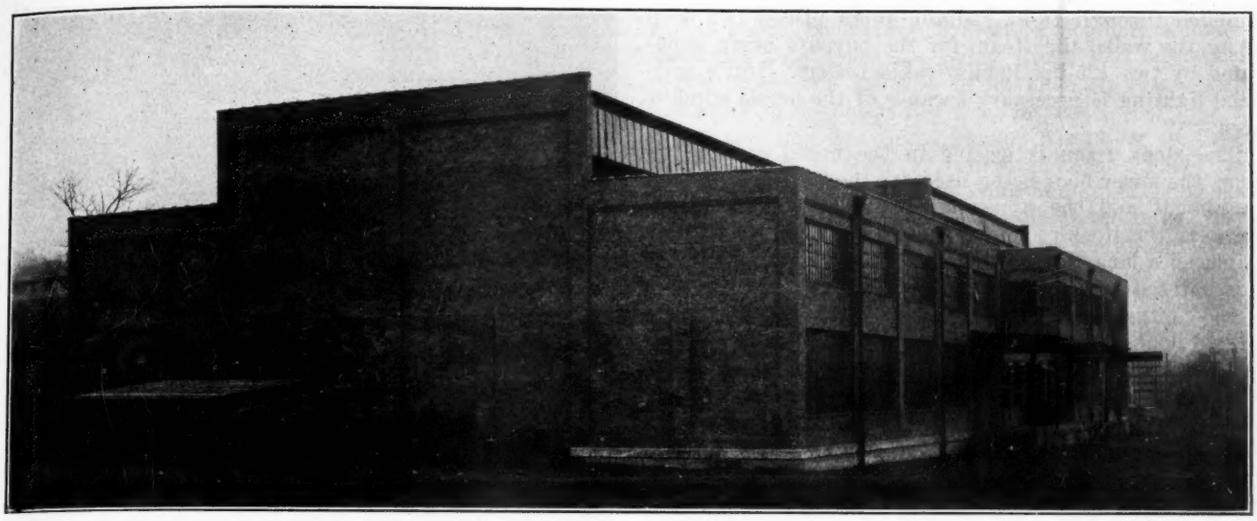
The number of skilled workers requisite to the operation of a central shop is much lower than that required for a number of individual shops even where the total of actual working hours is the same in each case. In the former instance the skilled men employed have an excellent opportunity to tutor a number of apprentices, performing themselves only those duties where skill is required. In this way all shop employees are kept busy, the apprentices acquire skill, and a much closer division of labor is made possible.

Here is should be remarked that many mines of small capacity have to maintain a machine shop of medium capacity because their location is so remote from other mines that a custom shop could serve but one mine and could not hope for any outside industrial business. In other cases, if other business did come to the custom shop, it would be performed under exceptional difficulties. By having a machine shop a long way from a mine, two or even more days are added to the time taken for every repair, and in extremely bad weather the delays may be longer.

In other places such repair shops have not been opened and rather than hunt around for a man to provide such a facility the operator erects his own. Where a new mine is near two or even several others already well provided, the operator may well argue that the other mines being able to take care of their own work, a custom shop might find it impossible to get enough work to justify its operation.

In this way coal mines are not like ordinary industrial plants, which usually are so located that they can depend on the services of a well-equipped custom shop where they can avail themselves of the organization and large equipment of such an establishment. Such a custom shop can and perhaps does add to repair work the advantages of manufacturing on a small scale. In that event it can often swing men from jobs of routine so as to make a light matter of a repair job which in the individual plant would take some days and much expensive overtime.

Operators have been a little slow to realize the importance of providing repair plants adequate to the maintenance and rebuilding of their equipment. The business of coal mining used to be regarded as akin to civil engineering and was quite largely recruited from that source, but today the mechanical engineering department is equally important, and hereafter mining men will be more largely chosen for their knowledge of machinery.



MAIN SHOP BUILDING; BEING SEEN LENGTHWISE THE SIZE OF THE STRUCTURE IS MORE OR LESS DISGUISED*

At Library the Pittsburgh Coal Co. Conducts a Central Machine Shop for Repair and Storage of Equipment

Fifty-five Mines Lying Within a Radius of Thirty Miles Send Their Repair Work to These Shops—Heavy Repairs Are Made at Mines by Skilled Mechanics from the Shops

BY ALPHONSE F. BROSKY†
Pittsburgh, Pa.

AN EXCELLENT example of a modern repair shop to meet the needs of a large coal company is exhibited by the Pittsburgh Coal Co.'s shops at Library, Pa. The village in which this shop is located is ten miles south of Pittsburgh, Pa. The company has fifty-five operating mines in the Pittsburgh district, with a possible daily production of 90,000 tons of coal. All of these mines lie within a radius of 30 miles of Pittsburgh. For years this company maintained two large shops, one at Scott Haven, Pa., on the Youghiogheny River, and the other, the Nixon shop, near Carnegie, Pa. Several years ago, however, it was decided to displace these by one large centrally located shop.

This resulted in the erection of the present installation at Library, which lies on a spur of the Montour R.R., on which six of the new mining plants are located. Many of the other mines of the Pittsburgh Coal Co. are on the Pittsburgh & Lake Erie R.R., with which the Montour R.R. connects. The Pittsburgh-Charleroi Ry. passes the shop and furnishes passenger and freight service between Pittsburgh, Washington and the Monongahela valley. Much material is transported by ship trucks, which take their loads at the mine and deliver them direct to the repair shop or vice versa.

The main building has a structural steel frame which rests on a heavy concrete foundation. The side walls are of rough-cut buff brick and have an unusually large number of windows, the sashes and frames of which are of steel. The building is fireproof, wood being used only in floor construction and then only where necessary for the comfort of the workmen. All doors are of steel construction and wherever possible fire doors are introduced, so that any fire breaking out may be readily isolated. The roof is of gypsum slab covered with tarred felt and the floors are of concrete. Kreolite wood blocks are used for paving the assembly aisle of the machine shop floor, with maple flooring under and upon the balconies where bench and machine hands are employed. The warehouse floor is of wood block on the first floor and concrete on the second. Steam heat is

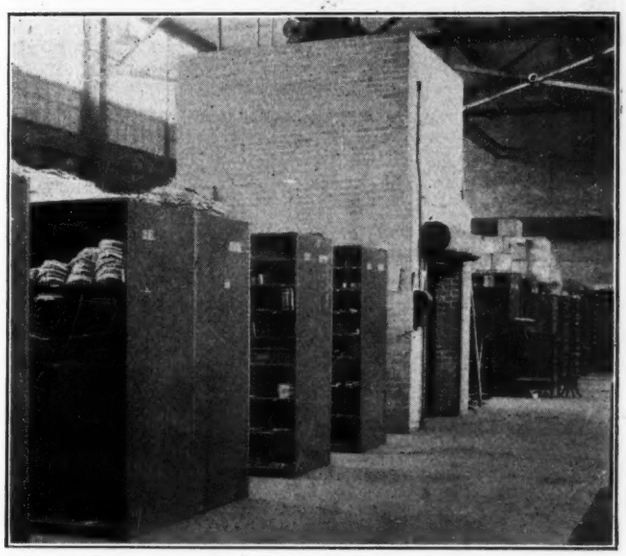


FIG. 1. SECOND FLOOR OF STOCK ROOM
On this well-lighted floor all the lighter repair parts and miscellaneous materials are kept in steel bins. The stock is well arranged and indexed. The elevator in the center leads to the stock room below, where heavy material is stored. Shelving and individual compartments are designated by number, corresponding to the record on the ledger cards.

*On the left can be seen one of the workmen's dwellings and on the right is the substation. The main shop building is constructed so that an addition may be built readily on either end.

†Bituminous Editor, *Coal Age*.

supplied through 1½-in. radiator pipes placed two deep along the walls, the steam for the purpose being generated by two 125-hp. Pennsylvania boilers. Little artificial lighting is necessary because of the ample window area.

The stock room is located in the north end of the shop, the lower floor being used for the storage of heavy equipment and the upper floors for lighter material. Between the stock room and the shop on the ground floor is placed a large and cheerful office with walls and ceiling painted white so as to reflect light. A runway connects the second floor of the stock room with the second floor of the repair shop; the office is of one-story construction. The repair shop contains two departments, the machine shop on the ground floor and the electrical shop on the balconies, each operated under a separate foreman. To the east of this part of the building stands a separate two-story structure, the first floor serving for the storage of inflammable material and the second floor being used for the impregnating of armatures and field coils. The impregnating room is connected with the winding department by an inclosed bridge.

A large fireproof garage has been built to the north of the main shop. This houses the trucks and passenger cars which the shop uses in connection with its work. The blacksmith shop and the substation are located to the southward. Several hundred yards away in the same direction stands the tipple of Montour No. 10 mine, the newest and largest mine operated by the company. A number of five-room dwellings have been built on a terrace to the east of the shops. These are occupied by the shop employees.

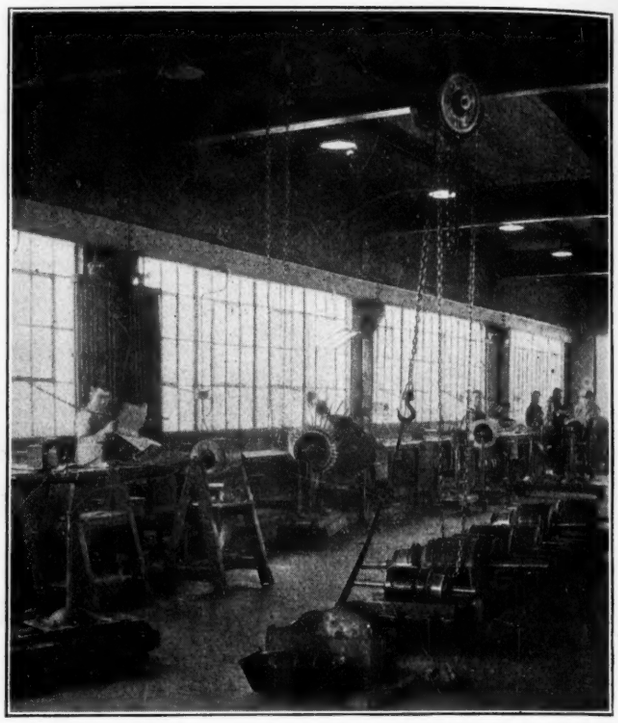


FIG. 3. ARMATURE-WINDING FLOOR AT NOON HOUR
The floor of the winding room is of wood laid on concrete. Ample floor space is provided.

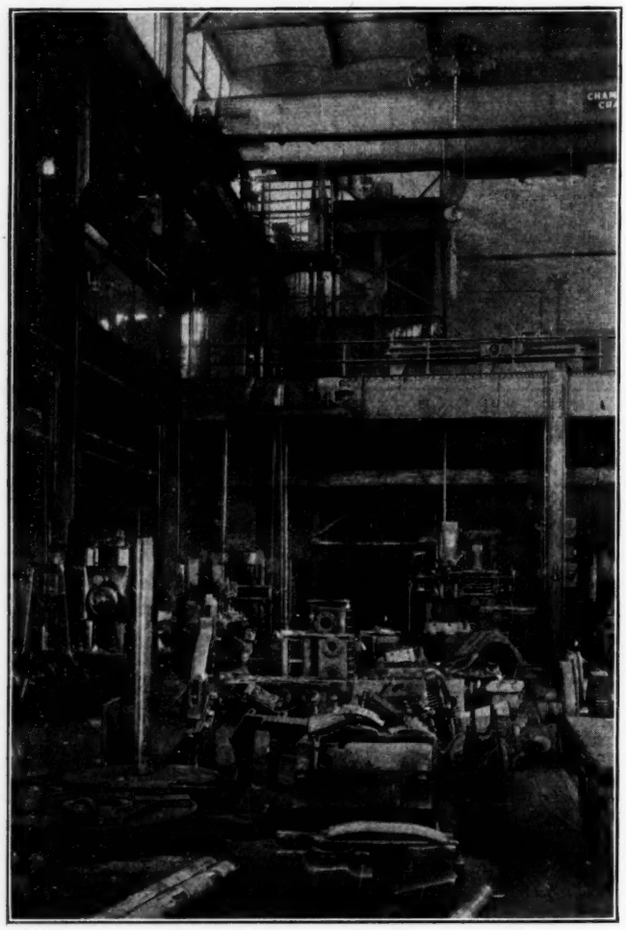
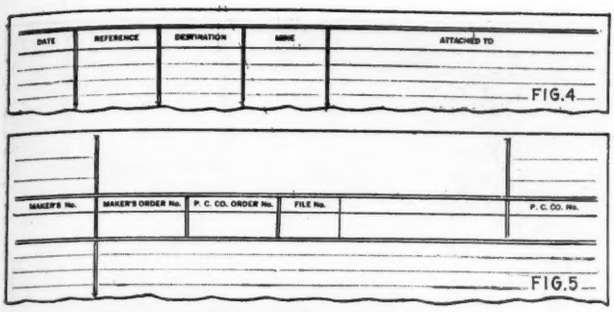


FIG. 2. MACHINE SHOP FLOOR
The 20,000-lb. Champion overhead crane shown in the background permits heavy equipment to be placed anywhere on the machine-shop floor or to be lifted to the northern electrical-repair balcony above. Smaller equipment is moved on two-wheel trucks to the elevator back of the crane. The gears shown in the center of the illustration are solid; split gears are not used.

Repair jobs from the company's mines are sent to these shops. No attempt is made to manufacture a stock of repair parts or to build equipment, the shops confining their attention to repair work. This includes repairs to mine-locomotive wheels and axles, gears, steam- and electrically-driven pumps, engines, motors, generators, air compressors, hoists, piping, etc., and everything mechanical and electrical about a mine. Repairs to cutting machines are performed at the mines by the machine bosses, all parts being carried in the storerooms at Library. About eighteen men are employed in the machine shop. By referring to the accompanying table an idea may be gained of the number and kind of machines used in these shops. All machines are driven by individual motors, no belts or counter shafting being used. The tool cabinets, benches and shelving are alike of steel.

A wide balcony skirts the north, east and west sides of the repair shop. On it is located the electrical repair department. Here motors and generators, both for alternating and direct current, ranging in capacity from ¼ hp. to 500 kw., are repaired. The west balcony is the assembly section, where motors and generators are torn down and rebuilt. A number of winding machines, several lathes and a few drill presses are included in the equipment. A miners' electric lamp department is placed at the south end of the west balcony. Here two men are engaged in the repair and maintenance of Edison batteries and lamps.

Armature repairs are made on the east balcony. The dipping room contains two large steam-heated ovens and two air-controlled dipping tanks containing black plastic insulating varnish. Directly below this room is



FIGS. 4 AND 5. FORMS USED AT SHOPS

Fig. 4 is a record of material at the mining plant. Under the word "Reference" is placed the invoice number. In the last column is shown what the motor—if it is a motor that is being tabulated—is attached to. Fig. 5 is the back of the card shown in Fig. 4. In the blank space is placed a description of the apparatus and its capacity.

located a large tank for the storage of this material. It has a capacity of 20 or 25 bbl. From this tank, varnish is pneumatically raised or lowered to or from the dipping tanks. Here also are stored all other paints, oils, greases and waste.

Eighteen men are employed in the armature room. Among these are a number of skilled winders and helpers. One man turns and undercuts commutators, and another performs the necessary machining of shafts. Three men are engaged on starting boxes, field coils and general repairs. One man tears down motors and attends to the dipping-room operations, and another boxes and unboxes armatures.

In the soldering of the terminals of commutator bars a departure is made from established practice. On large armatures electric irons have not proved successful. Fire-heated irons are slow and their temperature is continuously changing. A natural gas-oxygen flame is being used with favorable results. In using the ordinary soldering iron the worker must stand on the side of the armature and stoop over close to the work. In using the flame he may stand at the end of the armature shaft away from the work and apply the solder with ease.

The flame is hot enough to melt iron or steel, but it is manipulated with such rapidity as to have no injurious effect on the copper. The solder drops into place, and the work progresses almost as rapidly as the worker can transfer his flame and solder from one bar to the next. Because of the extremely small flame, which does not spread, there is no danger of charring the insulation.

A large platform has been erected on the east side of the building, along which runs a railroad siding. On the west, or front, side a concrete platform has been built, which serves both as a receiving and a shipping floor for material hauled by motor truck. It also serves as an entrance approach to the entire building.

In the repair department a 10-ton Champion crane extends across the floor of the machine shop and also across the north balcony of the armature section. Two-ton Yale & Towne hand cranes suspended from carriages running on beams serve the area above and below the balconies, so that any machine part may be lifted and deposited at any desired point. Small material is raised or lowered in the elevators, one of which is provided at each end of the building.

The boiler room, blacksmith shop and welding room are housed under the same roof. The blacksmith shop is equipped with forges, a Bradley power-driven bit-shaper and a steam hammer. The welding room is furnished with one General Electric 2-unit electric welder, six acetylene welders and one Wilson portable 3-unit electric welder. For heavy machinery that cannot be moved from the mines, however, a portable welder is employed, this apparatus being taken to the work by motor truck, the welding being done in place. This brings us to the subject of road service.

The company has in its employ a number of "road-men" skilled in their respective trades. These men travel from mine to mine, making and supervising such repairs as necessarily must be made at the mines.

Complete records and files of the equipment at all mines are kept in the office of equipment at the shop. Similar records are maintained in the Pittsburgh office, the data at the one place acting as a check upon the other. When a new piece of equipment is received a company name and number plate is securely fastened to it. In this way a double means of identification is provided. Should either the manufacturer's plate or the company plate be lost one identification mark still remains on the machine until the missing plate can be replaced. An entry is made in the files according to the notation of Figs. 4 and 5, which show the two sides of a single white card.

In Fig. 4, under the heading "Reference," is placed the invoice number for the particular piece of equipment in mind. The headings "Destination" and "Mine" are practically synonymous. If a motor were shipped to Montour No. 10, for instance, record would be made of that fact, and the card, with the other headings properly filled out, would be placed in the file of this mine. In case of a transfer of this motor to some other operation, the name of the mine to which it was sent would be placed in the space below the name of the one from which it came—namely, Montour No. 10. The white record card also would be transferred to the file of the transferee.

Should the motor be destroyed by fire or through some other accident, a record would be made of that fact opposite the name of the mine where it was destroyed, under the heading "Destination." The notation used in this space would be the term "Scrapped." The date also would be entered. As much of the equipment con-

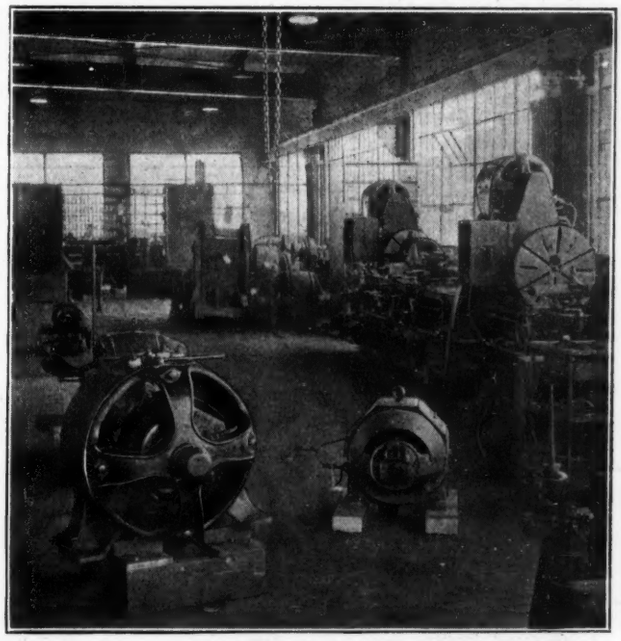


FIG. 6. WHERE MOTORS ARE TORN DOWN AND ASSEMBLED

The lamp-battery repair room is shown in the rear, separated by an iron wire screen.

LIST OF LARGER MACHINE-SHOP EQUIPMENT IN LIBRARY SHOPS

Type of Machine	Make	Number Installed	Size
Bolt Cutter	Standard	1	2 in.
Bolt Cutter	National	1	2 in.
Centering Machine	Prentiss	1	5 in.
Drill Press	Hoefer	3	26 in.
Drill Press	Niles-Bement-Pond	1	72 in.
Grinder	Blount	1	.....
Grinder	Norton	1	72 in.
Hor. Mill	Bement	1	30 in.
Lathe Vert	Bullard	1	42 in.
Engine Lathe	Davis	1	24 in.
Engine Lathe	Niles-Bement-Pond	1	42 in.
Engine Lathe	Hendey	1	18 in.
Engine Lathe	Lodge & Shipley	1	26 in.
Engine Lathe	Lodge & Shipley	1	24 in.
Engine Lathe	Porter	3	22 in.
Engine Lathe	Springfield	1	24 in.
Milling Machine	.....	1	No. 2
Milling Machine	.....	1	No. 3
Planer	American	1	36 in.
Wheel Press	Niles-Bement-Pond	1	300 ton
Key Seater	Baker	1	.....
Pipe Mach	Bignall & Keeler	1	10 in.
ARMATURE FLOOR EQUIPMENT			
Banding Lathe	Greaves-Klusman	1	.....
Drill Press	Hoefer	1	26 in.
Grinder	Blount	1	.....
Lathe	Lodge & Shipley	1	24 in.
Lathe	Niles	1	24 in.
Shaft Press	Niles-Bement-Pond	1	150 tons

sists of motors, the heading "Attached To" has been added. In this space is entered the type of machine driven by the motor.

The filling out of the reverse side of the card, shown in Fig. 5, is simple. No fixed scheme can be adhered to in making this record, as all kinds of equipment are handled. The blank space at the top of the card may be used for entering the title or character of the apparatus and the capacity. A cross-file system is maintained, white cards being kept in the mine file and similar blue cards in the equipment file. Going to the latter, one may readily discover the number and kind of pieces of each type of equipment.

Approximately 1,000 armatures of various sizes are kept in stock at the Library shops and at the fifty-five mines of the company. These belong neither to the shop nor to the mines, and careful record is kept of the whereabouts and size of each. In case of emergency if the armature required is not on hand at the mine, the shops are requisitioned by telephone. The files kept, at that point, furnish the necessary information as to the whereabouts of a spare of the needed type and capacity.

Listed in the equipment of the 55 mines, and cared for in the Library shops, are 15,000 Edison battery lamps, 750 mining machines, 218 trolley locomotives, of tonnages ranging from 6 to 25 tons (the majority of them weigh 13 tons), 18 storage-battery locomotives, 2,400 alternating- and direct-current motors varying from ¼ to 300 hp. (the total horsepower of these machines approximating 60,000), 98 steam engines with a total horsepower of 15,500. There are also 36 steam-driven generators totaling 8,000 kw. and 54 motor-generator sets ranging in capacity from 150 to 300 kw.

Several employees in the Library shops have been continuously in the company's employ for twenty years or more. The majority of these men learned their trades in the company's shops as boys.

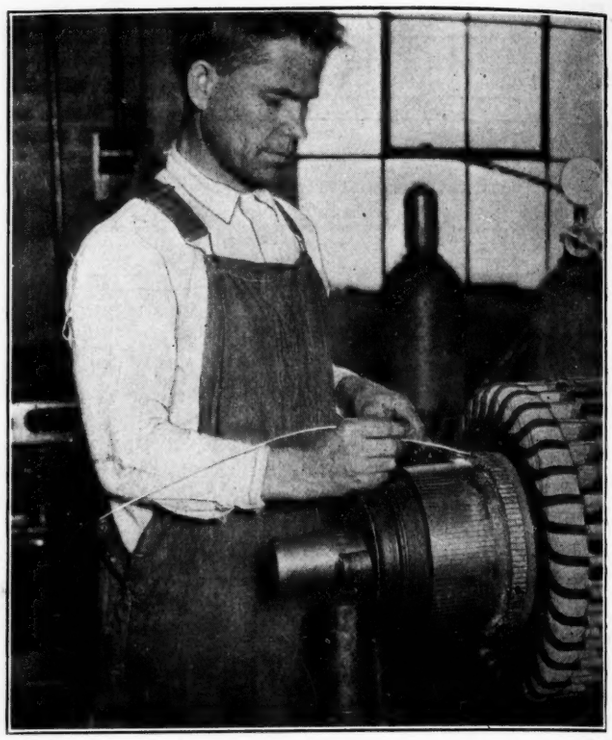


FIG. 7. SOLDERING COMMUTATOR BARS WITH NATURAL GAS-OXYGEN FLAME

Note the ease with which the man works. He does not have to exert himself or waste time keeping his irons clean. The flame does not soil the copper and so a good bond is obtained. This is not only a quicker way of soldering but a cooler way than the one it displaces.

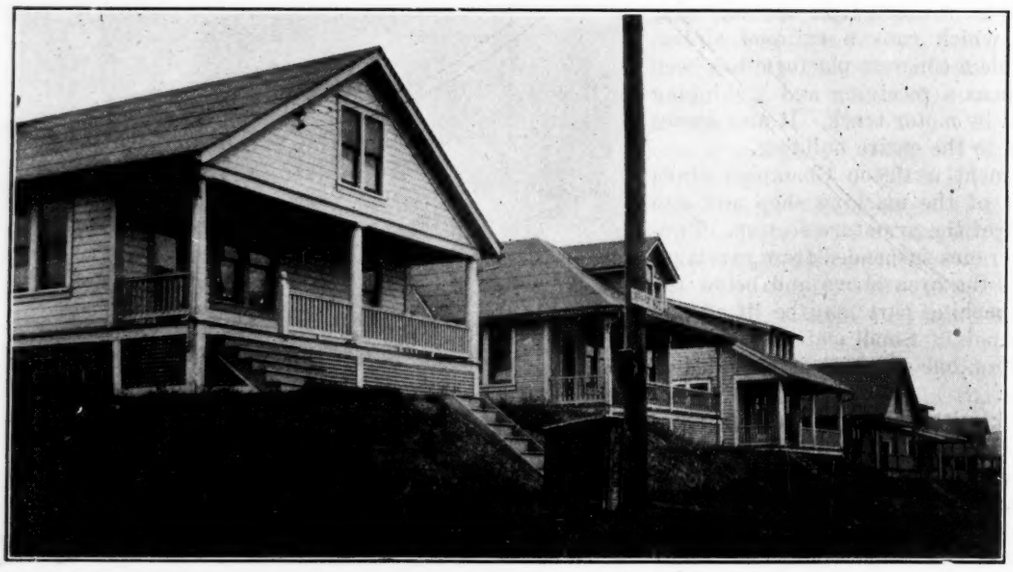


FIG. 8

Shopmen's Dwellings

These houses are modern, having hot and cold running water, furnaces, electric lighting, etc. Each house has five rooms and a finished attic. All the houses being painted differently, the group is known as the "Rainbow Row."

Intelligence More Important Than Knowledge in Successfully Managing Anthracite Mines*

Brainy Man Soon Acquires Information—Assignment to Special Work Reveals Fitness for Supervisory Positions—Shifting Value of Dollar Makes Physical Statistics of More Lasting Worth Than Financial

By W. H. Williams†

THE problems which confront the management of the mining industry or any other industry are largely the same. If any problem can be correctly and clearly stated, all intelligent men can agree on the solution. The difficulty we find is in stating the problem.

I am going to approach the subject from the standpoint of one operating many mines and having a large organization, and at the beginning I will just say a few words in regard to the anthracite industry. There are not many differences between it and other branches of mining. If there is any, it is in the number of veins in which we operate. We operate from eight to twelve veins. All of the mining operations have been going on in the anthracite fields of Pennsylvania since the early twenties. In the early mining the coal was recovered from the thicker veins, and the mining did not proceed along the lines of today. The pillars which were left in place were not regular, the mining maps were not preserved, and now that we are coming into the thinner veins we do not know accurately the condition of the coal in the veins in which mining has taken place. In the Northern field we have gotten into what we call the second mine, and the failures of the past are confronting us today. Had the mining gone forward in that way—had it gone forward as we proceed today—the pillars would have been columnized and our problems would have been much simplified.

Cutting Machines Seldom Used in Anthracite

There is one difference between the anthracite and the bituminous in that we have very little opportunity for the use of coal cutting machines. I believe about 60 per cent of the bituminous coal of the country is produced with the coal cutter. Only in the Northern field does the coal lie sufficiently level to permit of their use, and until recent years the coal cutters were not sufficiently strong to stand up against the anthracite. In the Southern field the coal pitches so much that it is impossible to use the machine. We have one other difference in the anthracite as compared with the bituminous, in that every miner, or practically every miner, employs a laborer, so that we have two men doing what one man would do in a bituminous mine.

In the anthracite field we pump approximately sixteen tons of water for every ton of coal that is produced. It is estimated that we pump water, lift the rock and pump in there the equivalent of about thirty-six tons for each ton of coal. This coal, after it comes to the surface, must be cleaned and sized, and for that we have what is termed a breaker. These breakers are about 160 ft. in height and 140 x 160 ft. base. A modern breaker will cost anywhere from $1,500,000 to $2,000,000. It is estimated that to open up a mine in the Scofield district which would produce approximately one million tons a year of output and to furnish the houses for the employees necessary to produce that tonnage would cost approximately $8,500,000. You will readily see that the investment necessary to produce the coal in the anthracite field is quite a considerable item.

Probably the first question which confronts the management is that of the personnel. I feel that too frequently we do not distinguish between knowledge and intelligence. There are many men who have the knowledge, but when it comes to the management we must have the intelligence as well as the knowledge. Of the two, intelligence is the more important factor. A man with intelligence will acquire the knowledge.

Men for Supervisory Work Carefully Chosen

On these men is dependent the selection of the men for the supervisory staff. In order to overcome the many mistakes which we have made in the past in the selection of men for these positions, we are undertaking now to select the men who in our judgment are likely to make good. We take eight miners and assign them to special work—men who we feel will develop into section foremen. We take four section foremen who we feel are capable of promotion to senior assistant foremen. Then we take four senior assistant foremen whom we believe to be capable of promotion to the position of foremen, and two foremen who we believe will be capable of promotion to the position of superintendent. These men are assigned to special work, first on one kind of work and then on another. They make reports of what they see, and, based on these reports, we determine whether or not we were wise in the selection of them for this kind of work. If they make good, they are likely to be selected for the first available vacancy.

We have often heard that the men in the management class devote too much time to detail. I feel we should make the distinction, however, as between the men devoting their time to detail and the men having a thorough knowledge of detail. It is absolutely essential that they know all branches of the work and of the day-to-day performance, in order that they may intelligently handle the problems which confront them.

Too frequently men are fearful that the men under them may develop so far as to jeopardize their positions. Our feeling is that the bigger you make the men under you the bigger you make yourself. The first obligation of any man is to develop these men under him, and I believe the real test of your efficiency as manager of any institution is the character of men you have selected for your supervisory staff.

At times the suggestion has been made that we should make some change in this staff because men are not making good, and in answer to this suggestion we have asked these two questions invariably: What have you told the man to do that he is failing to do? What have

*From an address before the American Mining Congress, Chicago, Oct. 7-22, 1921.

†Senior vice-president, Hudson Coal Co.

you told the man not to do that he continues to do? If you cannot answer either of those questions, then the failure of that man to make good rests with his superior officer rather than with himself. It is to be presumed that you have been put in the more responsible position because you have a greater knowledge of the industry in which you are employed. If you have that knowledge, you have also the increased responsibility of seeing that the men under you are given an equal opportunity to acquire full knowledge of the work to which they have been assigned.

Next in importance is the relation with the men. The first item which has a direct bearing on the relations is that of the miners' houses. I feel we have often made the mistake of painting all of the miners' houses one color, giving them the appearance of an institution. Some three or four years ago we tried out the policy of painting these houses in different colors and with a different body trim. That did not require any change in the construction of the houses and no additional expense. The difference in the appearance has been remarkable and much appreciated by the men.

Change House Has Modern Arrangements

Next in its effect on the men has been the character of change house or wash house where they change their clothes. We formerly had the old-style locker such as you see in the country clubs, but when the wet clothes were put in there at night and when the men come back in the morning the clothes were found to be damp. We therefore borrowed a plan which was developed in either Germany or Belgium. The building is some twenty feet in height with rafters from one end to the other and with strips of them near the floor. There is a chain going from the lower rafter to the upper, attached to which is a bucket and a clothes hanger. The man puts his clothes on the clothes hanger, his shoes and towel, soap and other things in the bucket, and pulls the chain until it goes up to the upper rafter, and locks the chain so that nobody can get at his belongings. It is found that by keeping these rooms warm, in the morning the clothes are nice and dry, and we have gotten away from the musty smell which usually is found around a club locker.

Next in this report is the treatment of the men who are injured. We make it a practice that where a man is killed or seriously wounded, the superintendent must personally notify the family and extend such relief as is necessary at the time to tide them over their emergency. He is required to visit men in the hospital and otherwise see that they are well taken care of.

We then have the question of discipline. We have adopted a standard. We got together the sixteen superintendents, gave them the causes for which men are disciplined, and asked them what in their judgment was a fair discipline for each of these offenses. After they had reached their conclusions we said, "That will be your standard. You must make the discipline more or less severe, but if you do you must state in writing your reasons for so doing." That has gotten away from the snap judgment which prevailed in the past and has materially improved our relations with our men. We have provided baseball grounds for recreation and have established a mining institute. Originally we had intended that the latter should be for the benefit of the officers only, but when the question was asked whether there would be any objection to inviting any of the men, we answered that we would be very glad to have that done. Much to our surprise, more than eight hundred men turned out at the first mining institute at one of the mines, as the result of which we changed the character of the meeting and the men are given an active participation in our monthly meetings.

We have also appointed miners' instructors. If the Poles predominate at a mine, we select a Pole. If the Italians predominate, we select an Italian, and so on. It has been found that by a slight change in the angle of the hole which is drilled and by proper instructions as to the charging of the hole, the amount of work which the men are required to do and the amount of powder they are required to use to blow down a given quantity of coal has been materially reduced, thereby increasing the earnings of the men anywhere from $1.25 up per day after instruction. This is quite an important factor. It is the ability of the men to earn a reasonable wage that determines whether or not they are satisfied with their work; and with the improved performance which has come as the result of the instruction, we have gotten a much greater degree of satisfaction among the rank and file.

There also is the question of safety. Mining is a hazardous employment. Each accident is investigated by a safety engineer, and in addition to that we undertake to analyze the cause of accidents and see to what extent it is possible to prevent future accidents. One of the helpful things is an accident chart locating on a map each accident which is reported. This soon brings to your attention certain places in the mines where accidents are of frequent occurrence, and a study of the accidents in that section enables you to apply the proper remedy. We have also taken the position that every man in our employ has a just grievance if he feels he has one until such time as the facts are clearly explained to him. The success of the institution is dependent upon the imagination of the officers—their ability to look into the future.

Development Planned Five Years Ahead

We prepare a five-year development program showing the coal from each section of the mine and from each section of each vein which we expect to mine during each of the coming five years. Based on that production estimate, we arrange our development program with reference to the driving of gangways, counters, airways, pumping, transportation, etc., and from these programs we make up our annual budget. The work of the different classes is assembled on the sheets, the estimated cost is shown, the effect on the output, the effect on our net earnings—whether it will increase our earnings or reduce our expenses—and the items of work selected for the coming year are dependent on the relative return which will come from the investment that is to be made.

In connection with these programs we have made topographical maps of each bed. We are finding these of considerable advantage in working out our transportation system so as to reduce the grades of our tracks, and thereby increase the work which can be performed by either the mules or the electric locomotives.

The statements are prepared showing the cubic yards of gangway work, airway work, etc., which is to be done during the year, and at the end of each month a statement is made showing what has been accomplished and whether we are up to our schedule or not. In the anthracite fields sufficient attention has not in the past been given to the question of transportation, and yet

there is no one item which so materially affects the output of a mine.

First there is the question of equitable car supply. We have numerous complaints from the men of inability to receive all the cars they desire. Analysis of the subject indicated that if there was a breakdown, the tendency was to throw the cars into the chamber nearest the shaft, with the result that the men in the outlying districts did not get a fair car supply. We now have an arrangement under which the men place orders for cars as they go to work in the morning, somewhat after the fashion that shippers on a railroad place their orders for cars, and a statement is made at the end of each day and at the end of each month showing the extent to which we have furnished all the cars that were requested by each of the men. We have found in some places where we were not furnishing a full supply, that the transportation facilities were inadequate to permit of supplying all the cars needed for the number of men located in that section. Pending the time when we could make the development we have reduced the number of men in that section, thereby enabling us to give a full car supply to those who remained at work, and without in the slightest degree reducing the quantity of coal that came from the section.

Output Increased Without More Cars

In handling car distribution we have found it advantageous to install in each section of the mine telephones which are connected up with a car distributor located in the superintendent's office. With a view to testing the efficiency of the men in handling cars we numbered all of the cars in a mine and kept a record of the trips which were made by each car. Much to our surprise we found that there were a number of the cars that made only one round trip in something like four days, nothwithstanding the fact that we averaged about one trip per car per day for the entire mine. But this pointed out the places in the mine where delays were occurring in the handling of the cars, and this study has enabled us to increase our output without increasing our number of cars.

Each superintendent is given a statistician. We feel, however, that in the past we have been what you might call dollar mad in preparing statistics. I don't mean that we were looking for the dollar, but in preparing our statistics we have used financial statistics rather than physical statistics in analyzing the operations. Financial statistics do nothing more than to indicate whether you are conducting your business at a profit or a loss. They do not measure the efficiency of your men. Your dollar is as changeable in its value as any other commodity, and with the changes in the rates of pay and the changes in the prices of material, any statistics which are based on dollars are not on a comparative basis. We, therefore, use the physical statistics. A man hour is the same today as it was yesterday, last week, or a year ago; it is the same over a five- or ten-year period. This is true as to the ton, as to the car, as to the locomotive, as to the mule, etc., and when your statistics are prepared on that basis you have comparative figures over a five- or ten-year period which clearly indicate the way you are drifting.

Among other statistics we have those relating to the refuse in mine cars and the topping of mine cars. A miner is required to top his car anywhere from 5 to 8 in. The quantity of refuse is dependent on the character of the vein. For the purpose of testing these out, we have what is known as a jury house, where three or four cars each day are supposed to be tested. At times we have found that the man in charge apparently was influenced by other than the best interests of the company, and so we have put on special testers, taking twenty consecutive cars from each section of each vein and testing them with these special testers. We have found in numerous cases that the average amount of refuse shown by these special testers was in excess of the average of the cars tested in the jury house, notwithstanding the fact that only the worst cars were supposed to go to the jury house, which clearly showed that our sectional foremen were not reporting the worst offenders and arranging for their cars to go to the jury house.

The next physical test is that of the sizing of the coal, which is an important factor in anthracite mining. Some 60 to 65 per cent of the coal is what is termed domestic sizes, that is used in the home. The balance consists of coal used exclusively for steaming purposes, the market price of which is dependent upon the price of bituminous coal, and which is very, very much below the average cost of mining, usually running from $3 to $4 less than the average cost of mining a ton of coal.

One of our best tests is what we call the yield per 100 cu. ft. We have the cubical content capacity of the car, plus the topping, multiply the number of cars handled by that cubical content, and divide it into the output per day, which enables us to find out what the yield is per 100 cu.ft. That is affected by the topping and is affected by the amount of refuse, and if the yield is going off it indicates that our supervisory staff are not giving sufficient attention to the refuse and topping.

Analysis Keeps Up Quality and Prevents Waste

We then analyze the coal prepared for market as to the percentage of refuse and as to sizes, to see that it meets the market demand and that the men are not undertaking to overcome their inefficiency by preparing an inferior coal for market. We analyze the refuse on the dump to see that good coal is not being wasted. We also analyze the coal going to the boiler room, with a view to seeing that only the poor grades of coal are put in the boiler room and the better coal sent to market.

We also have statistics showing the tons of coal per keg of powder produced. These are useful not only from the standpoint of indicating whether the men are being properly taught how to produce the coal but when cases come up where the men claim that the coal is too hard in any one section, a comparison of the powder figures will give an idea whether their contention is correct.

We also analyze the quantity of rock with a view to seeing its relation to the quantity of coal produced and its effect on our cost. Our man-hour statistics are divided as between producers and non-producers, and we ascertain the quantity of coal that is produced per man-hour or per man-day. The earnings of the men are analyzed individually and by sections. This work is done by the auditing department. Where the earnings of the men in any section are indicated as below what we regard as a reasonable figure, they are run in red and forwarded to the colliery's superintendent, who is required to make a personal examination of the situation in that section to ascertain why the men are not making fair earnings. This has helped us to locate some of the places where a car supply was insufficient and where it was impossible with our facilities to get sufficient cars back to the men.

Horizontal Shaking Screen Which Keeps Coal Moving In One Direction Without Jerking Tipple Structure

By Revolving Weights and Spring Supports a Compound Motion Is Obtained Whereby the Coal Is Caused to Travel Forward Continuously—By Duplicating and Opposing the Parts Useless Vibration Is Prevented

BY ALPHONSE F. BROSKY*
Pittsburgh, Pa.

SEVERAL stages have been passed through in the development of screening facilities. In the first the coal was moved over the screens by gravity. This method was only partly successful. Discovering that proper separation could not be obtained upon grizzlies, inclined shaker screens were adopted, and the coal sized over them was at once recognized by the trade as being superior to that made over gravity screens. Manufacturers of mine equipment desiring further simplification next brought out a shaker screen that was horizontal. This device lent itself readily to the hand picking of sizes larger than nut and slack.

Both the inclined and the earlier horizontal shakers were given a reciprocating motion, the reaction from which had to be absorbed or resisted by the tipple frame or by special supports. These proved at once troublesome and expensive. Many attemps have been made to balance these screens, but the results have not been entirely gratifying.

The C. L. Miller Co., of Scottdale, Pa., manufacturer of mine equipment, has perfected a horizontal shaking screen, the invention of C. L. Miller, the reciprocation of which is secured through the revolution of unbalanced weights. The screen moves back and forth without anchorage or connection to any stationary object other than the foundations that support its weight. This statement may seem ridiculous on first thought, but the screen so oscillates nevertheless and in such an easy and quiet manner that the shopmen who built and installed the first one promptly dubbed it the "shimmy shaker."

DRIVE HEAD MOVES COAL STEADILY FORWARD

The screen body is of the ordinary plate type, built to suit local conditions. To this is secured a drive head that shakes the screen body with a peculiar motion, effecting a movement of the coal in one direction only over the horizontal decks. Inasmuch as the idea embodied in this device is an entirely new one, it might be well to go into the mechanics of the drive head which produces this motion.

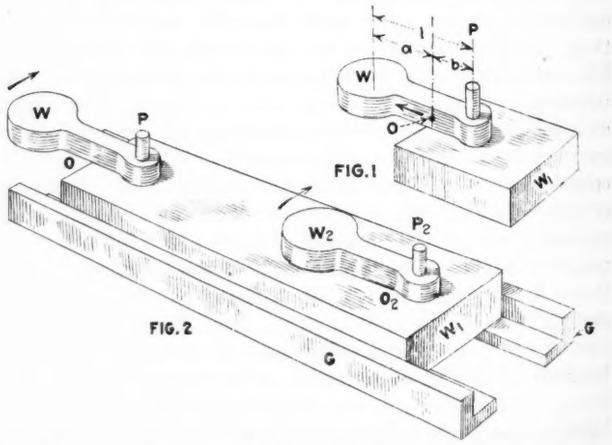
In Fig. 1, W is a weight pivoted on the pin, P, set in the block, W_1, which is assumed to be fixed. If the weight, W, is caused to rotate about P at a uniform velocity, it will exert on it a certain radial pull, depending upon the mass of W and the square of its speed of rotation.

Now suppose that the block, W_1, is free to move in any direction. The weight, W, is rotated at a certain velocity, and the centrifugal force will pull the block, W_1, out of its original position of rest. It accordingly will rotate about the vertical gravity axis or center of gravity of W and W_1 combined. The distance of this new center, O, from the pivot, P, is b, and from the center of gravity of W its distance is a, the ratio of the two being such that $Wa = W_1 b$, where W and W_1 are the masses of the weight and of the block respectively. As will be seen, the distance b will remain constant regardless of the velocity of revolution of the weight, W. At all speeds the point of the pivot, P, will describe a circle about point, O, with b as a radius.

For screening, the circular motion of block W_1 is not desired. What is desired is an unbalanced speed of reciprocation on a fixed line. Accordingly, as shown in Fig. 2, W_1 is placed between guides so that it can move only in a straight line. The block is shown elongated for further consideration and is supported in the fixed guides, G, so that it can move only in a line parallel to the guides. Now if the weight, W, is revolved at a uniform velocity, it will react on block W_1, attempting to move it in a circle with O as a center, as before. But since the guides, G, prevent all but straight-line movement, the block will move backward and forward between the guides with a simple harmonic motion.

Simple harmonic motion is that closely approximated by any reciprocating object when controlled by a connecting rod from a crank or eccentric on a revolving shaft. It is practically the motion of the standard inclined shaker screen. If an inclined oscillating screen were made horizontal, the coal on it would simply shake back and forth with each stroke and would not travel progressively to the end of the shaker.

It therefore follows that a motion other than simple harmonic, produced by a single revolving weight, must



FIGS. 1 AND 2. DIAGRAMS SHOWING PRINCIPLES ON WHICH MOTION OF SHAKING SCREEN IS BASED

In Fig. 1 the weight W revolving about the pivot P, which is attached to the free weight W_1, has a composite motion as if revolving about the point O, which is located so that the moment of W is equal to the moment of W_1. In Fig. 2 are shown two independent weights, W and W_2, revolving about pivots, P and P_2, which are attached to W_1, that weight being controlled by the guides, G, so that it can move only along a straight line.

*Bituminous Editor, *Coal Age*.

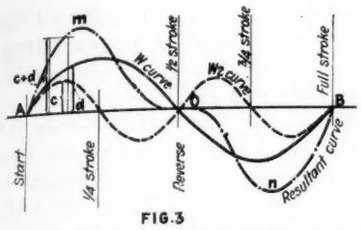


FIG. 3

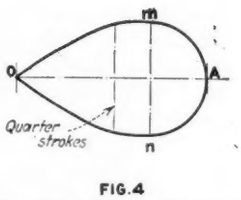


FIG. 4

FIGS. 3 AND 4. SPEED AND ACCELERATION CURVES FOR COMBINATION OF THE TWO HARMONIC MOTIONS

The resultant speed curve, Fig. 3, for a combination of two harmonic motions, one twice as rapid as the other, is an extremely rapid movement, as at m, and a comparatively long period of almost entire rest, followed by another extremely rapid movement, as at n. Fig. 4 is an acceleration diagram of the same motion, the forward accelerations being plotted above the stroke line and the return movement below it.

be obtained if the principle of an unbalanced force is to be applied successfully. Suppose then that another weight, W_2, be mounted and caused to revolve on the block, W_1. Its motion and consequent centrifugal force would act upon W_1 in the same manner as did that of W. The resultant travel of the block W_1 between the guides, G, would then be a combination of the travels induced by the force reactions of the two revolving weights.

Now let it be further assumed that the revolving weights W and W_2 are connected in such a way that each has a fixed movement in relation to that of the other. For example, suppose that W_2 revolves twice as fast as W. Now if there is no slippage, at every revolution of W the two weights will come into exactly the same position as indicated in Fig. 2. The weight, W, will tend to impart simple harmonic motion to W_1, but while W is acting through one cycle W_2 will tend to impart to W_1 a harmonic motion through two cycles.

Referring to Fig. 3 the full-line sine curve there shown gives the transverse movement of the block W_1 under the action of the weight W. The dotted curve shows the movement of the block as the result of the movement of W_2, while the resultant of these movements is shown by the dot and dash curve. This last is a combination of the first two, their ordinates being algebraically added.

It will be noted that the highest point of the resultant curve, which represents the greatest velocity of travel of the block, W_1, occurs before the quarter-stroke point and that on the reverse movement it follows the three-quarter stroke point. The maximum velocities of travel for both the other curves occur on the quarter and three-quarter points respectively. The resultant force imparts to the block, W_1, a motion which, when applied to a horizontal screen, will cause the coal upon it to travel continuously in one direction by a series of glides in harmony with the movement of the screen.

From the velocity curves may be derived an acceleration curve, shown in Fig. 4. From this it is easily understood how the motion of a horizontal screen causes the coal to travel in one direction. The lettering in Fig. 4 corresponds to that of Fig. 3 as regards the maximum and minimum points. The curve described in the return stroke has been transposed so as to begin and end the cycle at the point O. In this cycle curve the fact should be noted that the point of maximum acceleration does not coincide with the quarter-stroke point.

Starting at O the screen accelerates gradually to the value m, the actual speed being so regulated that the coal on the screen is carried forward without slippage.

At m the coal has reached its greatest velocity and each particle has stored within itself a certain amount of kinetic energy. From m to A the screen continues to travel in the same direction but its movement is retarded rapidly. This retardation is so swift that the kinetic energy of the coal overcomes its friction

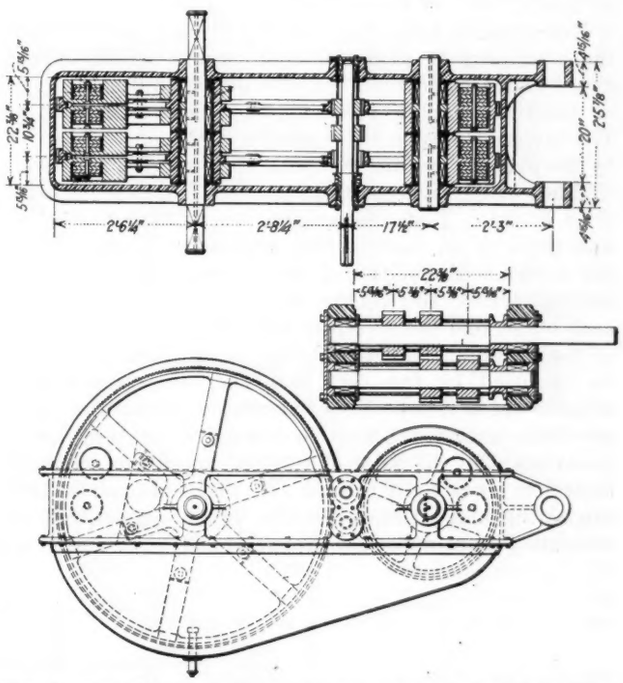


FIG. 6. PLAN AND ELEVATION OF SHAKING MECHANISM

Gears driven by a belt from an electric motor cause two pairs of eccentrically loaded gears to revolve, one pair making twice as many revolutions as the other. This combination turns a simple rotating movement into a jerking action, which shakes the screen but not the building in which it is erected.

on the screen decks, and consequently it glides forward. At A the direction of travel of the screen is reversed and its movement rapidly accelerated to its maximum reverse speed at n. Meanwhile the kinetic energy of the coal continues to overcome friction. The coal consequently continues its forward movement, gradually slowing down to zero at the point O, which is the end of the return stroke and the completion of the cycle.

The weights on the drive head are adjustable and may be regulated so as to equalize the kinetic energy of the coal stored up from O to m and the frictional retardation forces from m through A, and thence through n to O, both these latter portions of the cycle being on the retard, or return, stroke. As a result there is no backward travel of the material on the screen to confuse the pickers as they remove the refuse.

In the discussion of Fig. 2 it was stated that the guides, G, prevented the block, W_1, from receiving side motion. Now the force necessary to move the block, W_1,

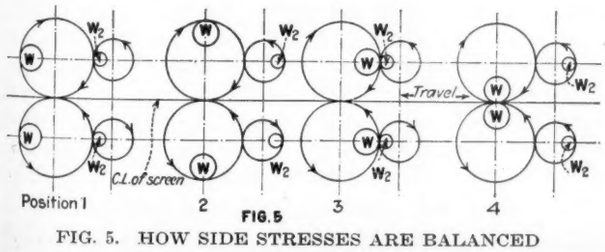


FIG. 5

FIG. 5. HOW SIDE STRESSES ARE BALANCED

It will be noted that at all points the weights are pulling squarely apart or pushing squarely against each other except as they act in the direction of the screen travel, thus leaving no forces to be resisted by the rigidity of the mechanism.

along the guides must equal the reaction on the guides. The revolving weights, W and W_2, exert forces upon the block, W_1, equal in all directions, when considered individually. The block in turn exerts a force equal in all directions. If these side forces were actually absorbed by means of guides as indicated, there would be quite a load on a full-sized installation. In practice the drive head counteracts these forces within itself. This is accomplished by using a double set of revolving weights, moving in opposite directions with equal linear velocities.

Fig. 5 gives a graphic analysis of this detail. In addition to the control weights, W, two smaller compensating weights, W_2, revolving at a 2 to 1 ratio, relative to the large ones, are shown. The larger weights are called control weights because they exert the controlling forces on the screen body, making it oscillate with each revolution. The smaller are termed compensating weights because they serve only to alter or modify the action of the larger ones.

Experiments have disclosed the proper ratio between these weights to give the best results on the screen. Fig. 5 shows the control weights in four different stages or positions during one cor lete cycle or revolution. The weights revolve in opposite directions, as shown by the arrows, and the compensating weights are shown in their respective positions at each quarter period.

In Position 1 all the weights are pulling to the left and there is no force acting across the center line of the screen. In Position 2 the control weights, W, are pulling across the center line but are counteracting each other, and the screen is moving under the influence of the weights, W_2, acting to the right. One should not be confused by the fact that the two compensating weights are here travelling in opposite directions. They are truly exerting forces to the right, as they are at this instant at the point of reversal and about to change direction from right to left. In Position 3 all weights are acting along the center line of the screen, but the weights W_2 are opposing the weights W. No forces are now acting crosswise of the screen. In Position 4 the weights W are acting across the screen, neutralizing one another, and the screen is controlled by the weights W_2 acting to the right. It will be readily seen that there is never an unbalanced force acting across the screen. Forces, of course, act in this direction but they do so in pairs, are of equal magnitude and opposite in direction. Fig. 5 also shows the manner in which the two control weights are alternately assisted and opposed by the compensating weights, as disclosed by the analysis of Fig. 3.

In order to keep these four revolving weights turning at the 2 to 1 ratio and always in their proper positions, one with the other, they are placed within four intermeshing cut-steel spur gears which revolve on two shafts, all being driven by one countershaft. The details of the drive head are shown in Fig. 6. This head consists of a cast-steel one-piece frame designed to support the shafts and to make connection to the screen body, which is supported by pedestals. This frame is carefully machined to templet. The fixed shafts on which the gears revolve are of high-carbon steel, ground to diameter, drilled and provided with "Allemite" grease fittings for pressure lubrication of the roller bearings supporting the gears.

The gears are of cast steel with machined teeth, and the hubs are extra large. These parts are machined to templet, so that all are interchangeable. The weights mounted within the large gears are cast separately and for safety are fitted about the outside of the gear hub. The small gears and their contained weights are cast integral. Provisions are made in all weights for adjustment in "tuning up" each installation. Each gear is supported by two Hyatt roller bearings.

The countershaft of high carbon steel is splined, the heat-treated steel pinions driving the machine being fitted over the splines. The construction is such that the countershafts can be removed, and a pinion replaced within one hour. These driving shafts run in Hyatt

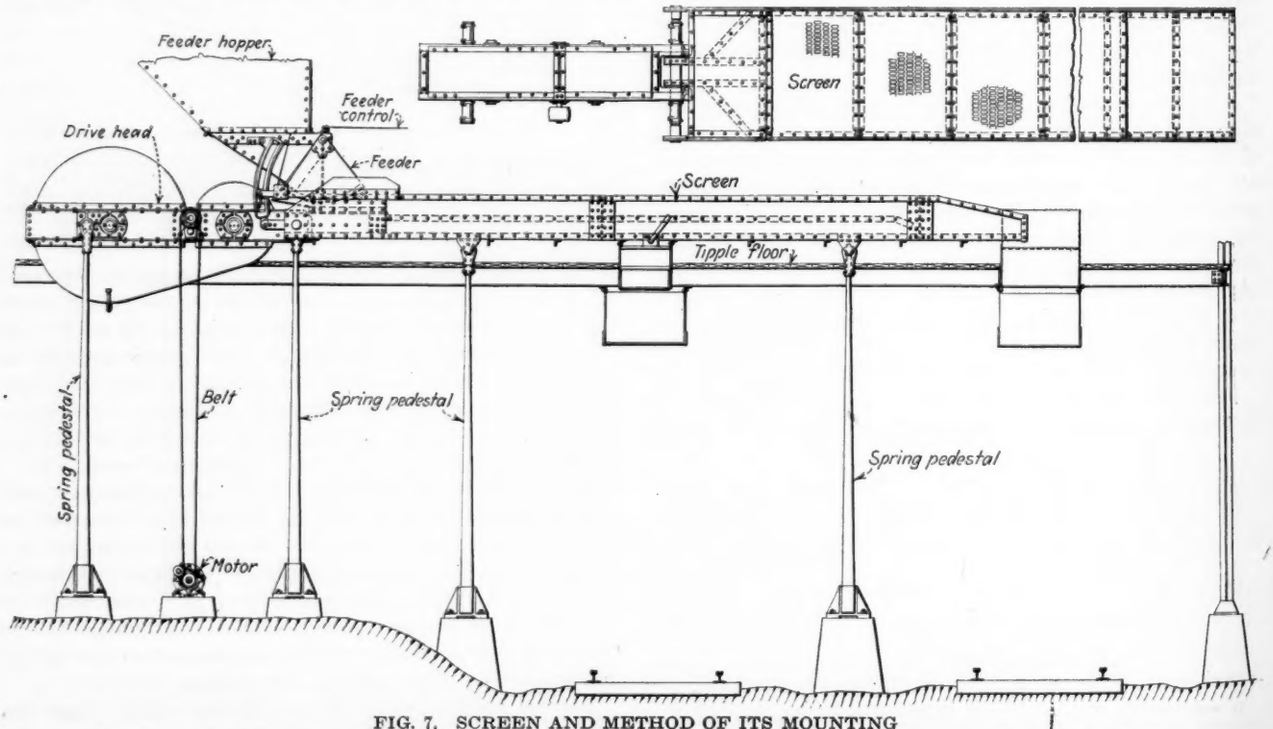


FIG. 7. SCREEN AND METHOD OF ITS MOUNTING

All the parts, both screen and drive head, are mounted on resilient wooden shaker arms. On the left is the feeder hopper, which, actuated by the same drive head as the screen, delivers coal at short, regular intervals.

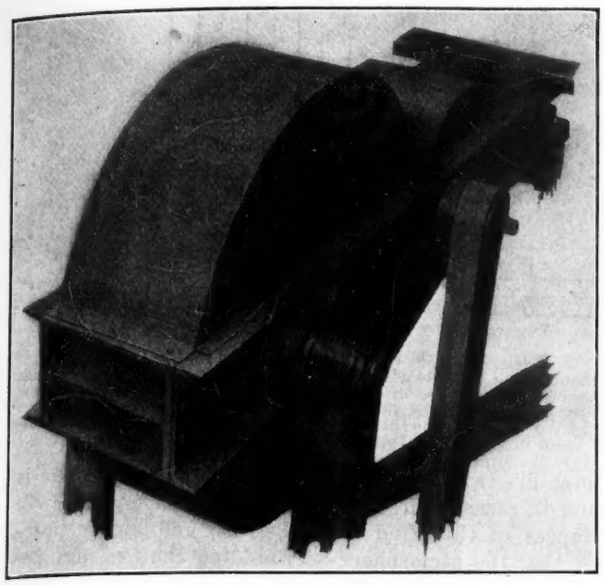


FIG. 8. DRIVE-HEAD MECHANISM

Felt gaskets exclude dust and grit from the working parts. The splash system is employed for lubricating both bearings and gears. Eighteen parts in all, only seven of which are different, are subject to wear and therefore to replacement.

high-speed roller bearings lubricated with grease by the pressure system.

Moving parts of the drive gear are completely inclosed within an electrically welded steel casing, bolted to the main frame. The upper portion of the casing is in two parts to facilitate its easy removal. The bolts holding it in place are provided with lock washers, and provision is made to relieve them of the shake of the drive head. The lower portion of the casing (the crankcase) is filled with engine oil for lubrication of the gears which dip into it. The various portions of the casing are fully felt gasketed to the frame, so that all dust is excluded from the moving parts. Wherever bolted connections are made in the mechanism, castle nuts are used.

A steel shaft extending from one side of the screen to the other and provided with four bearings connects the drive head and screen body. Both head and screen are supported by wooden springs, as shown in Fig. 7. These pedestals consist of a heavy base casting bolted to the foundations and a hardwood tapered upright, set and securely fastened in the socket of this casting, also a cast-steel cap that receives and supports the trunnions of the screen and drive head. This combination gives the necessary flexibility of support to the screen throughout its oscillation. The wood of the spring pedestal is kiln dried and oil treated and is either maple, ash or hickory.

At first glance one might look askance at this suspension arrangement. Intensive tests and investigations, however, have eliminated all elements of chance affecting its reliability. In one of the factory tests the length of the stroke was increased to 24 in. without rupturing or developing any weakness in the wood. As the usual stroke length is only 6 in. the apparent safety factor is 4 +. The real value of this figure was not determined by this test. An added merit in the use of timber pedestals, aside from their action as supports, is the resilience that they possess. The work done in deforming the timbers, during any stage of the cycle, is stored up in them as elastic energy to be later released on the return. Thus no appreciable energy is lost.

The feeder shown in Fig. 7 is of the oscillating type, driven from the connecting shaft through the link motion shown. This feeder is adjustable as to capacity and is thrown in and out of gear by raising or lowering the end of the connecting arms within the curved links. When the link block is in the uppermost position the feeder plate does not move.

Drive heads of this type are made in four sizes, Nos. 5, 5½, 6 and 6½. They are driven by a belt provided with a take-up arrangement. A 9-hp. motor will drive the smaller size, which with a 5-ft. screen will handle 250 tons of coal per hour in a two-track tipple. The screen is provided with gates so that slack, nut, lump or run-of-mine may be loaded with equal facility. When once tuned up the unit is self-controlled and operates uniformly, regardless of the load placed upon it. The variation in the stroke lengths when the screen is running loaded and empty is small. The inherent forces set up by the machine alone do not produce this condition, but the several forces that are operative compromise or counteract each other, so that a balance is maintained under all conditions of load. Thus, with a heavy load on the screens, the inertia stored up in the lumps of coal is great, but the frictional resistance set up between them and the screen surface is increased correspondingly. For a small load the inertia is small, as is also the frictional resistance. What the flywheel is to a prime mover the wood pedestal is to this screen. These members function similarly in their respective capacities, storing up energy and giving it out again when needed, accumulating the surplus and returning it as conditions demand.

Decrease in Cost of Tipple Structure

This device considered in its entirety embodies the merits of the best types of screens and in addition possesses several advantages hitherto unobtainable. Thus, while the first cost of the machinery proper is approximately 10 per cent greater than that of an inclined shaker of standard type, the total installed cost is approximately 15 per cent less than that of the old type of equipment because of the decrease in the expense of the tipple structure and because of the simplicity of installation.

Power consumption is small, as this device will operate on one-half the energy necessary for any other type. This device also renders possible more efficient picking than do ordinary horizontal shakers, the effort being the same in each case. The coal is either traveling in one direction or is at rest throughout the entire stroke of the screen, instead of travelling to a certain extent in both directions.

This screen is well adapted to installation in an old tipple because it does not depend for support upon either the tipple frame or on expensive and massive foundations. It operates with little noise, and as the screen structure is absolutely independent of the tipple, the vibration of the building is minimized.

As will have been perceived from the foregoing description, construction of the drive head follows the practice that has proved efficient in the automobile industry. This similarity is particularly apparent in the adoption of the splash system of lubrication and the exclusion of dust and grit from the working parts by means of felt gaskets. Only eighteen working parts in the drive head are subject to wear and, therefore, to replacement. Because of duplication, however, only seven of these are really different. The upkeep cost thus is appreciably decreased.

Can Mine Fires Be Successfully Fought by The Aid of Cooled Boiler Gases?

BY JOSEPH J. WALSH
Wilkes-Barre, Pa.

WHICH method is most effective in extinguishing a mine fire is determined largely by the location of the fire and various other conditions connected therewith. Three methods are commonly practiced in fighting mine fires: First, the direct method, in which water or some prepared chemical is used; second, flooding, in which the mine, or that portion wherein the fire exists, is completely filled with water; third, sealing, in which advantage is taken of a condition created by the fire itself, namely, that the inert gases produced by combustion are imprisoned within the fire area by means of stoppings erected around the affected section.

As this latter method is now quite generally practiced and as there seems to be a difference of opinion as to which stoppings should be erected first—those on the intake, or those on the return side of the fire—it might be well to discuss the dangers attending the sealing of a mine fire, particularly if located in a gaseous mine.

Fig. 2 shows a mine in which a fire exists at the face of chamber No. 5. The stoppings on the return and intake airways are marked *A* and *B*. Stopping *A*, that on the return side of the fire, unquestionably should be erected first, as by so doing the inert gases produced by combustion cannot escape and will, therefore, form a zone around the fire that will smother it. Any firedamp that might accumulate and enter this zone will immediately become so vitiated as to be entirely harmless.

On the other hand if the intake stopping be erected first the inert gases produced by the fire will tend to move to the fan; similarly any firedamp that might accumulate inside the fire zone also would tend to move in the same direction and pass over the fire.

Another condition in connection with the sealing of a mine fire in which the element of danger is serious is found in cases where the fire to be sealed is small. In instances of this kind it is possible, and highly probable, that the atmosphere surrounding the fire may become explosive before the oxygen content is sufficiently reduced to render the inflammable gas inert. In such cases it is advisable to permit the fire to increase in magnitude before seals are erected.

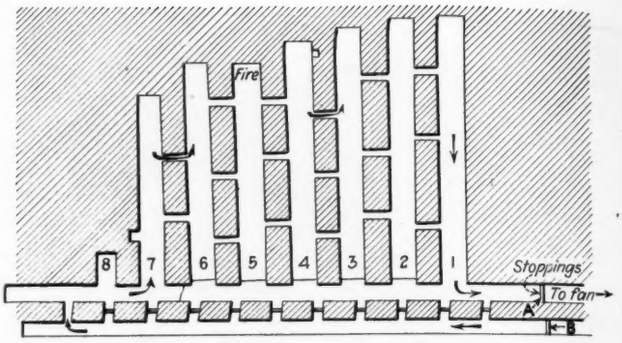


FIG. 2. A FIRE IN A SECTION OF EIGHT ROOMS
Should it be closed off at the intake or return? In either case the air moves till the first stopping is completed, and dangerous gas may pass over the fire. [In each case when the stopping is completed the air has little or no motion, unless there is leakage from or to the surface or from adjacent workings.—EDITOR.]

Circumstances surrounding a mine fire may be such, however, that the methods described fail. Such conditions may be found in crop fires, where it is practically impossible to exclude fresh air from the burning section because of the broken strata and the closeness of the fire to the surface. A fire located in an inaccessible part of a mine furnishes another example of a condition that is difficult to overcome by the application of the commonly practiced methods.

In all such cases fresh air, to a greater or less extent, will enter the fire area, and the products of combustion will leave it through cracks and crevices. More than a score of such fires exist at the present time in the anthracite region of Pennsylvania, some of which have been burning for more than fifty years, resisting all attempts to extinguish them. It would seem that the inert-gas method was the most practical for subduing mine fires of this character. A description of this method follows:

This plan contemplates keeping a constant supply of inert gases flowing through the fire area of the mine. The gases used will be those resulting from combustion, chiefly nitrogen and carbon dioxide. The presence of oxygen to the extent of 8 to 10 per cent might be permissible, as an oxygen content of this magnitude will not support or aid combustion. Such gases may be produced by an ordinary furnace such as that of a boiler and are in every respect similar to those found in a boiler stack, except that the excess air must be somewhat lower than usually is attained in ordinary boiler practice.

The quantity of gas required per minute will be dependent on the physical conditions of the fire area, such as the extent of the working and the number and size of the unsealable

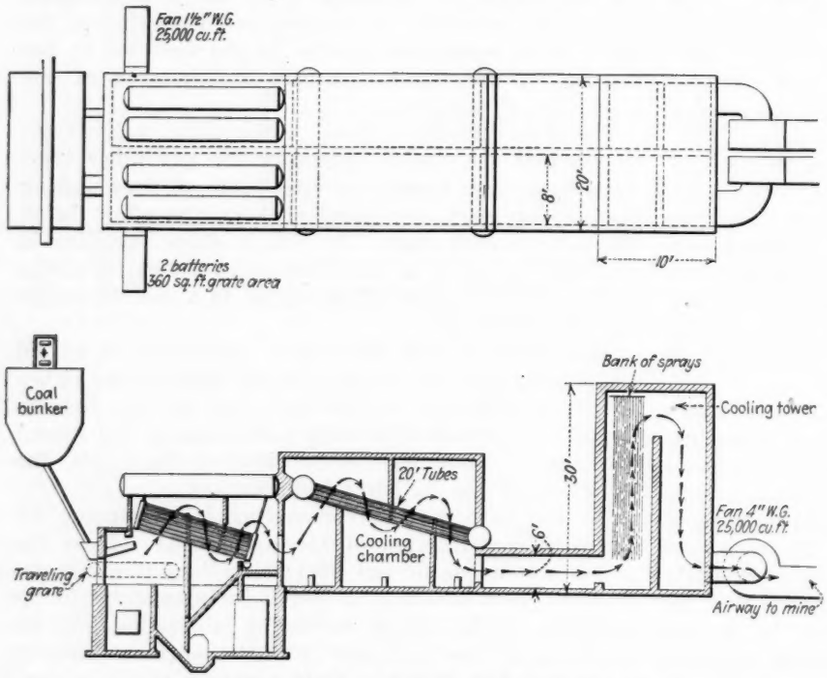


FIG. 1. EQUIPMENT FOR MAKING INERT GAS
In the plan suggested the air is freed of oxygen and loaded with carbon dioxide by burning coal on a traveling grate. The inert gases thus made are to be cooled in a cooling chamber by passing them over twenty tubes containing cold water, and they are to be further sprayed in a cooling tower. They will then be ready for use in extinguishing the fire in the mine.

openings through which the gas may escape before penetrating the fire zone. It would be an unusual condition, however, that would require more than 15,000 cu.ft. of gas per minute.

With a gas containing 8 to 10 per cent of oxygen, the combustion of a smoldering fire would cease instantly. If, however, the fire has an incandescent glow, combustion would continue for a short time, but its extinguishment would be a matter of minutes only.

The length of time that would be necessary to cool the mine sufficiently to preclude all danger of re-ignition after the mine is opened and fresh air admitted, cannot be determined with any degree of accuracy. I believe, however, that under the most unfavorable heat conditions, 15,000 to 20,000 cu.ft. of gas at a temperature of 60 deg. F., flowing through a mine or section of a mine having an area of fifty to sixty acres, would lower its temperature sufficiently to remove all danger of ignition in three or four months.

Fig. 1 shows an installation designed to produce 25,000 cu.ft. of inert gases per minute. The furnace is similar to that of a Babcock & Wilcox boiler fitted with an automatic stoker of the traveling-grate type. This arrangement assures an even fire at all times, thus eliminating the possibility of an excess oxygen content, either periodically or continuously.

After leaving the furnace the gases enter a cooling chamber, where, by reason of properly arranged baffles, they move among tubes through which cold water is flowing. It is estimated that this treatment will reduce the temperature to about 300 deg. F.

A further and final lowering of temperature takes place in the cooling tower, at the top of which a bank of water sprays is so arranged that water may be sprayed into and through the ascending gases, decreasing their temperature to about 60 deg. The cooled gases now enter the downward compartment of the tower and pass thence to the mine by way of the fan.

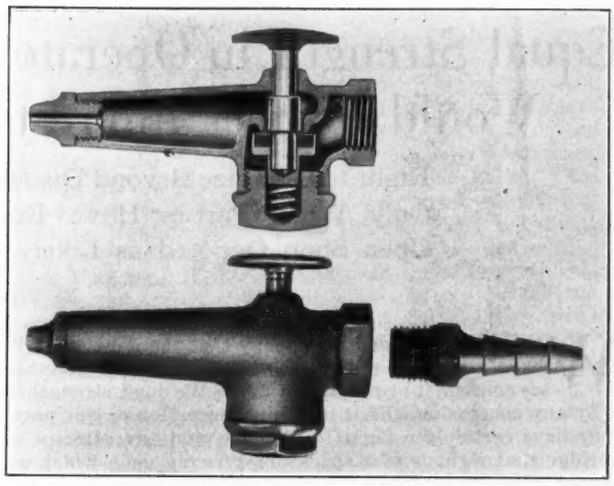
Four furnaces with fire grates each 9 x 10 ft., making in all 360 sq.ft. of grate area, will be required to furnish 25,000 cu.ft. of gas per minute. Four tons of rice coal per hour will be necessary for the production of this quantity of gas.

Such a plant may be located at any point convenient to the fuel and water supply. In case the airways leading from it to the mine are long, its effective operation will not be seriously impaired. Such a condition, of course, will require a higher water gage to overcome the increased friction offered by the air duct, but because the fan is of the blowing type the pressure existing within the airway will preclude all danger of fresh air leaking in and decreasing the efficacy of the smothering gases.

Gun for Cleaning Machines by Air Blast

IN MANY mining plants, particularly shops, power houses and substations, but to a lesser extent in tipples, breakers, pump houses and the like, where compressed air is available, it is freely employed for blowing off machines. Not only are chips and dirt thus removed from machine tools such as drill presses, lathes, shapers, planers and the like but dirt, dust and chips are blown from work benches, the hammer slag from bulldozers, and dust from engines, pumps and power-house and electrical equipment generally, including transformers and the backs of switchboards.

So general has become this practice that a demand has been created for a reliable "air gun," or nozzle for the end of the air hose. To meet this Jenkins Bros. have developed and are now marketing the device shown in the accompanying illustration. It is extremely simple in construction and not liable to get out of order. Air flow is controlled by means of the push trigger that actuates a renewable disk valve. This disk seats evenly and tightly under the pressure of a small spring and the air itself. When worn out it may be renewed easily and quickly.



AIR NOZZLE FOR CLEANSING MACHINES

A large push button on the top of the nozzle on being pressed opens a renewable disk valve and allows the air to escape at full force. A small spring and the air itself seat the valve as soon as pressure on the button is removed.

Today, when conditions are such that much work must be done by few men, not only must operation be performed, wherever possible, by mechanical means but these means must be made easy of manipulation and efficient. It is in accord with this idea that the air gun here described has been developed. Light, easily operated and efficient, it not only conserves air but aids in getting work done which otherwise might be neglected or at best slighted.

Few Cases Come Before Compensation Board

THE State Bureau of Workmen's Compensation of Pennsylvania, in a review of the six-year period since its inception, in 1916, calls attention to the fact that but 1.47 per cent of the settlements ever reach the Workmen's Compensation Board.

Out of 386,288 agreements effected only 13,826 cases were assigned to referees for settlement. This is about 3 per cent of the cases that have been brought to the attention of the bureau. The board reviews cases on appeal from referees.

The referees in the ten districts into which the state is divided have awarded compensation in 4,364 cases and have disallowed 2,731 claims. Adjustments before decision was made by a referee made it possible to dismiss 4,379 cases. A total of 931 claims were withdrawn during the six years.

THE SAMPLING OF COALS from the mines of Carbon County, Utah, has been completed by the U. S. Bureau of Mines. A bulletin on the analyses of Utah coals generally is being prepared for publication.

COAL AGE INDEX

The indexes to Coal Age are furnished free to all who ask for them. The index for the last half of 1921 is now ready for distribution. A copy can be had by addressing a postcard to the subscription department of Coal Age.

Equal Strength in Operators' and Miners' Organizations Would Protect Interests of Labor and Producer*

Right to Organize Beyond Dispute—Effective Co-operation Possible Only When Parties Have Equal Power and Responsibility—Open Shop Opposed as Likely to Cause Cut-Throat Competition

By Philip Penna

WE HAVE conceded here today that the mine workers have a right to unionize. It doesn't matter whether we concede it or not, it is a fact. We don't strengthen it by any concession, and it isn't any concession on our part; they have certainly a right to unionize, and any attempt to abridge that right is of a species of tyranny upon which we cannot afford to establish the relationship between labor and the employer in a big industry like the coal industry. Then we must find something else.

It has been said that co-operation—collective bargaining—should be resorted to. I want you to understand that there always have been and there always will be disputes between the employers and the employees and, no matter how strongly we might wish for a different situation, that will always be true.

In that connection let me say something else that perhaps you will not agree with: this idea of mutuality of interest between capital and labor is largely exaggerated. There is not nearly so much of that as we would like to think. Now I am not denying that there is some, because there is; there is mutual interest between employers and employees involving the methods of conducting business, whether it shall be brutal or whether it shall be intelligent, whether we will have strikes or whether we will have reason. Strike is war; that is all it is. Until that question is settled (and that is our great problem today—how to settle it) it must always be before the industrialists of the land.

Recognizing that mutuality of interest, as far as we can now see it, it is not unreasonable to expect that those who follow us probably will see it further than we can. There may come a time when it will be recognized and be made an actuality and influence the business to a greater extent than the most visionary, hopeful individual today can imagine. I like to think that will come, but I don't know whether or not it will; it is not here now, we know that.

Strikes Came as Regularly as the Seasons

Co-operation. Collective bargaining. Thirty-five years ago there were men in this nation who conceived the idea that strikes were brutal, that strikes meant war, that they made children cry for bread, that they destroyed property all over the nation, and just as soon as one strike was settled and before the parties to the conflict had recuperated from their losses and their hardships, before the miners paid their debts where they had gotten credit, and before the operator got his business around to anything like decent shape, then another strike ensued. They came about as often as spring and autumn, and everybody was injured; nobody profited from them. The coal operators grew poorer and the miners would have if such a thing had been possible. There was physical suffering.

There were some men that met in Indianapolis Sept. 8-12, 1885, and they were not employers of labor, either; they were not coal operators; they were a bunch of men inured to the hardships of the mine. They met there from various states in the Union, and they passed a resolution something like this:

"Whereas, strikes are fundamentally wrong, wrong in principle, wrong in practice, and should, if possible, be avoided, therefore be it

"Resolved, that we petition the coal operators of the States of West Virginia, western Pennsylvania, Ohio, Indiana and Illinois to meet us in a joint convention where we will sit down around the table and thrash out our difficulties and forever dispense with the brutal strike."

Understand there were not any Alexander Howats in that convention. It was made up of men who had gone through a big strike in Ohio which hungered the miners and broke up some of the companies in the Hocking Valley in '84. Some of you remember it. There was a strike in Indiana for nine months. There was a strike in the Pittsburgh district for three or four months. Braidwood was the seat of war in Illinois at that time and had gone through a strike. The mine workers were anxious to avoid strikes, and together with the operators—it must be said to the credit of the operators, old Oscar Townsend of Ohio, our friends Dempster and Robbins and several from Pennsylvania, Jenny and Yeoman and others from Indiana, Colonel Sweet and Mr. Lemon and some others of those old people from Illinois—started a joint convention. That joint convention was a declaration that the open shop had been tried and was a despicable, miserable failure. Lots of you don't like that, but you cannot gainsay it. It was a miserable failure under which neither coal operators nor coal miners could live.

Open Shop Proved an Industrial Failure

Why, the open shop is as old as the ages, and it is because it couldn't meet and didn't meet and doesn't meet, and until you have absolutely revolutionized human nature, you can't make it meet the demands of our present industrial system. It is true the Constitution of the United States and of the states, and the statutes, both federal and state, in support thereof, give to every man a right to work for whom he likes and for what he likes, provided the other man wants him to work for him; that is true. It gives to the other man the right to employ him or not. That Constitution and those statutes were made before corporations were organized, before the executives in corporations had their legal talent and experts in every department surrounding them; and perhaps it was before a subordinate's advancement in his industry depended upon his ability to cheapen production at the expense, among other things, of the laboring man's wages.

Let us be square. How can a poor individual butt up against a corporation and obtain justice until selfishness is eliminated? How can he do it? Did you ever see it done in your lives? All of you old men, practical men and young men coming along have never in your lives seen an employee enjoy his rights—rights as sacredly and as forcefully guaranteed by the Constitution of our nation as any rights—his civil rights, his political rights, his religious rights, his industrial rights, and defend them under such conditions as exist. How can he enjoy and defend those rights as an individual against a corporation that doesn't want him to enjoy them? He can't do it. It never has been done; it never will be done unless selfishness is not eliminated but modified and made more intelligent. There is such a thing as an intelligent selfishness, I presume.

What should we do? Permit and encourage our men to unionize, provided always that they respect the right of the other man as they demand respect for themselves. If they will not concede you that right, then there should be enactment of law that would compel them to do it or forbid their existence as an organized body. That is the way I look at this thing. Every man should be conceded the right to make a contract. During the process of negotiating that contract every man should be permitted to ask for anything

*From an address before the American Mining Congress, Chicago, Oct. 17-22, 1921.

which he thinks he is entitled to. Of course he doesn't always get what he asks for; you understand that; none of us does. After the contract is made, he should be compelled to respect that contract or be just as legally responsible as any other honorable business man is and wants to be.

I believe that comes nearer to the solution of our proposition than anything else that I can think of. What is the use of talking about co-operation unless it be between two parties of equal strength—then you have real co-operation—or between a dozen parties of equal strength? There should be equality in the negotiation of contracts as between parties thereto. That means organization among the employers. You have got it. You haven't got it to such perfection as you ought to have. It means organization among the employees. When that contract is made they should both be equally responsible and be compelled to respect it.

Now we are told that cannot be done. I don't know whether it can or not. I know some big men in this nation have said that it cannot be done, and other equally big men have said it can be done. At the present time we don't know just what the legal responsibility of the trade union is or what it amounts to. There are some cases now pending in our courts that sooner or later will be determined and will make matters clearer to us than they have been at any time heretofore.

Judge Hughes said: "Incorporated unions are not persons and cannot be sued as such, and the members of those incorporated unions cannot be sued as members thereof." That was Judge Hughes' attitude in some of those trials in the past. There is only one answer at the present time, seemingly, that answers the quest as to what the law is as affecting us, and that is Aaron Burr's definition of law—that it is forcibly presented and plausibly maintained. But because of the chaos—because of the uncertainty, rather—that exists at this time, it does seem to me that if all of the people who are interested in those questions, and especially the American Mining Congress, could agree among themselves and could agree in themselves as to the policy and then pursue that policy, and ask our law-making bodies, our legislatures and congress, for a little while to suspend their rules of political expediency and get right down to honest-to-God work and make some laws covering this question, it would solve the problem.

Mine Workers' Now a Lawless Organization

Then what would we have? We would have peaceable relations and operations. You men know we had it for a good many years, don't you—long, long years ago? The mine workers' organization then was not seriously complained of; it was not accused as a lawless body, and I want to say to you now that the accusation is true. The mine workers' organization to-day has got to the point where it has no respect for its own laws, no respect for law or order or decency; a defiant, autocratic, lawless mob. The other day I was talking like I am now and a fellow said to me, "You are only getting some of the things that you started out after. Serves you right!" I don't know but what the point was in a measure well taken. While I am talking about the right of the trade unions, I am not talking about the trade union that is not in accordance with law.

What would we have? We would have a legally responsible body of men on both sides; we would have no strikes; we would have conciliation and arbitration in preference as a method of settling disputes. The nations of the world adopt that method; that is, when they are of equal strength. This country and Great Britain would arbitrate; you know that; any dispute would be arbitrated. We must have equality, that is all. The mine worker must be able to defend his position, to defend his rights. They are as sacred to him as yours are to you, and he is entitled to enjoy them to the full, just as much as you or any other man.

The mine worker is not going to make a union and allow you to write his constitution and rules and by-laws. He is going to write them himself; he is going to make a union to protect his rights that are sacred and valuable, and he has a right to, just as much as you have. If the mine workers attempt to do more than that, then there should be legislation in the shape of the big stick that will make them decent.

I want to tell you there are a whole lot of coal miners in America to-day who are decent and want to be decent and don't belong to the lawless element. There are lots of good men among them who would like to have just such a union as I have dreamed of and as I am trying to speak of now. We would have a union strong, able to defend its rights; you would be strong, able to defend yourselves; and then like two strong nations—Great Britain and America—neither one of you would want to say fight; you both would want to sit down to the table and adjudicate your differences and settle them on a basis of equity. Further than that, if there should then come the time that you could not agree with your men and they could not agree with you, some honest difference arising, then invite the public—the American public—and have the public do for that industry what it had demonstrated its inability to do for itself. The public has a right to do that; it has no business interfering in our affairs until we have tried—not a bit in the world. We ought to be allowed to try. When we fail, then it has the right to take us over and say, "Gentlemen, you are incapable and we will do for you what you have failed to do for yourselves."

Open Shop Would Embarrass Operators

This open-shop proposition is only a fad, you know. As far as the coal industry is concerned it is only a fad. What would you do with it if you had it? If you had a union of the mines, a little union at the mine, or if you didn't have any union and you got right down close to your employees and sat down talking with them, you would make a scale of wages, and over here would be the other gentleman doing the same thing. He would make a scale of wages, and all along the line in the same district and interdistricts you would all make scales of wages and you would all make them different. The American consumer isn't going to give the man with the high-cost production a little more money because he didn't have as much skill or had a little too much humanity in dealing with his labor. No, he is going to buy his coal where he can buy it the cheapest. Then what happens? Well, I would go out and have a meeting with my men, I would get in close touch with them and say, "John and Bill, my trade is gone; that fellow over there, Harry Taylor, went out and talked to his men the other night and they took a 5c. reduction from their wages. I've got to have a 7½c. reduction to get back that business or I can't get along. You know, Bill, your family needs your work and you know we are friends and we don't want to shut down our mine. That fellow Taylor has done that very thing. Now you take the reduction and I have got my 2½c. to the good. I will go out and take his trade then." As foolish as that may sound to you, that was actually the rule of life in the coal fields of Indiana, Ohio, Pennsylvania and your great State of Illinois. What I say is true. Some of you old men back there know it is.

That is the way it would be again tomorrow, but we can't live that way, and you know it. We must have uniform cost of production, as near as physical conditions will permit, and after we have done all that we can toward that uniformity, there is still enough irregularity in the physical conditions to make a great difference in cost of production, but we must do our part; we *must* do it. We have ceased to be a little community industry; we have ceased to be a little state industry; we are a national industry and the railways have eliminated to a very great extent any exclusive markets; we don't have them any more. We have got to go out and compete with each other and the world, as far as this country goes, and it is getting to be more so now; the world is our market.

I believe heart and soul in union labor, in union of employers, in collective bargaining, in responsibility before the law, absolute and equal with all parties affected, and the man that doesn't want it and won't submit to it voluntarily, by the eternal should be made to do it or be put in jail.

In view of the development of the surface stripping method of mining coal in different fields, the Bureau of Mines has undertaken an inquiry into the present cost of steam shovels used in coal-stripping operations.

Problems of Operating Men

Edited by James T. Beard

Ventilation by Continuous Current

Plan of Ventilation by Continuous Current Requires Taking Special Precautions in Driving and Timbering the Rooms—How the Continuous-Current Plan Varies in Arrangement from That in the Split System

SOME time ago a question given in a recent first-class examination, at Birmingham, Ala., and answered in *Coal Age*, Nov. 17, p. 809, had reference to the instructions to be given men, in respect to the working of their rooms when driving under bad roof, both when the mine was ventilated by a continuous current and by the split system of ventilation.

As stated in the answer to this question, its actual meaning is very obscure, which makes it difficult to give a satisfactory answer. At the same time, it seems to me that I am able to sense the meaning intended, by drawing on my practical experience in Alabama mines. The question reads as follows:

> In a mine employing a continuous air current for ventilation and the air-courses where the use of timber is necessary for support of the roof, how would you instruct your men in reference to working their rooms? Would you use the same method on the split system? Explain.

There seems to be apprehension, in the mind of the person who formulated the question, regarding the future safety of the mine by reason of the bad top, making it necessary to use special precautions in timbering both the rooms and the air-courses.

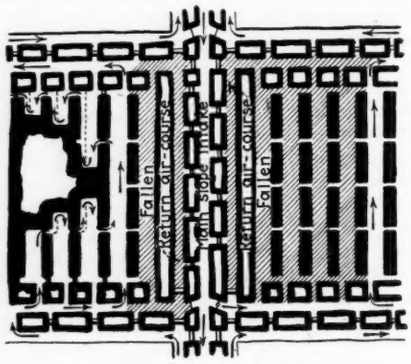
Why Special Care Is Needed

The question of timbering becomes a serious consideration, in a mine where it is necessary to maintain the original air-courses a considerable length of time, as is common in the continuous-current system of ventilating. The use of a continuous current requires frequent retimbering of the roads and air-courses, particularly here, where no preservative treatment of the timber is employed owing to the plentiful timber supply in this state.

Taking these things into consideration, it is clear that to avoid expense, every effort must be made to cut out the air-courses and carry the air in as direct a route as possible throughout the mine. With this end in view, I have prepared a sketch, shown in the accompanying figure, illustrating a plan of ventilation that makes it possible to cut out the air-courses and shorten the distance of air travel as rapidly as possible.

The plan shows the section of a mine in which the main entries are driven three abreast, the middle entry being the main intake for the entire mine, while the two side entries are the return air-courses for their respective sides of the mine. The mine is developed on the advancing plan.

It will be observed that all the rooms are driven to within a short distance of the air-course above and then holed



PLAN SHOWING ADVANCING ON RIGHT AND RETREATING SYSTEM ON THE LEFT

through into that air-course. This feature makes it possible to carry the air current through the last room that has holed into the air-course when ventilating on the continuous current system.

In the figure, the section on the right of the main heading illustrates a plan that is adapted to the ventilation of a mine generating little or no gas. On the other hand, the section on the left of the main heading shows a plan of ventilation that should be adopted for the ventilation of a gaseous mine. In each of these sections, the hatched portion illustrates the portion that has been abandoned and allowed to fall in.

Advantage Gained by Coursing the Air Through the Rooms

The advantage of the plan here shown is readily seen from the large extent of air-courses that have been abandoned and allowed to fall in as the work has progressed. Assuming the rooms are driven on 40-ft. centers, it is seen that each room that holes through into the air-course makes it possible to eliminate 40 ft. more of airway and save that amount of retimbering.

As each new pair of cross-entries is driven and the work develops to the extent that the first room has holed through into the air-course above, it is possible to abandon the length of main air-course extending between these two pairs of headings, the return air being then carried through the first room, instead of circulating through the return air-course, as before.

Rooms Must Be Well Timbered to Prevent Their Closing

Now, with this explanation, let me suggest that each room, as it is driven up and holes through into the air-course, becomes itself an airway on which the entire circulation of the mine depends. Under these conditions, it is clear that special instructions must be given to the men, with respect to driving their rooms at a uniform width and taking every precaution to timber them securely to prevent their closing before the next adjoining room holes through into the air-course.

This, I take it, is the real meaning of the question asked and the instructions necessary to be given the men would differ widely from what would be required in the employment of the split system of ventilation.

If this is not the right meaning, I hope we shall hear from some member of the examining board, who will explain the meaning intended by the question. I know that many who have taken the examination and others preparing themselves for following examinations are watching these answers in *Coal Age*, and it is important that their meaning should be fully understood.

Bayview, Ala. JOHN WALL, SR.

Economy in Mining Coal

Economy starts with plan adopted—Advancing plan brings quick returns—Strong prejudice of old-time miners hard to overcome.

I WAS strongly impressed with the remarks of Fred Ross, a Kentucky mining engineer, in his letter, *Coal Age*, Dec. 15, p. 966, and the economical arrangement shown in the plan of mining he there presents.

In the mining of coal, it is of the utmost importance to adopt a plan that will prove economical and bring the largest results in the quickest time. This is particularly true in respect to our American mines.

Advancing Plan Brings Quick Returns

Mr. Ross has written with particular reference to the concentration of work, by maintaining a regular line of robbing when drawing back the pillars. In speaking of the relative merits of

the advancing and retreating systems of working, he appears to prefer the advancing system as yielding the quickest returns on the investment.

For several years, I have advocated the adoption of this plan, but have never had the opportunity of fully carrying out my ideas. I am glad to see this plan presented in so clear a manner, as it cannot fail to be of great benefit to mining engineers and managers if they will study the plan carefully and follow it out in the development of the mine.

In my opinion, not only does the plan provide means of efficient ventilation and concentration of work, but it will yield a maximum percentage of coal per acre, and minimize the danger of creep or squeeze occurring in the workings, provided the details of the plan are carefully followed.

Strong Prejudice of Foreign Miners Hard to Overcome

One of the great drawbacks in American mining, in respect to the adoption of economical methods, is the large number of English, Scotch and Welsh miners in charge of the work in our mines.

As a rule, the majority of these men have gained their experience in a single locality or district. They are largely men of one idea and it is difficult to impress them with the advantage of a new plan. Their reply is always, "It was never done that way in the old country."

Not knowing the nationality of Mr. Ross. I believe I am safe in saying that the plan he has presented is the most economical plan of any I have ever seen advanced. If properly worked out, making only such changes as may be necessary to conform to the pitch of the seam and provide good haulage and ventilation, it is bound to prove successful. I would like to see the comments of others regarding it.

James F. Gamille.

Frederickstown, Pa.

Waste of Mine Timber

Sending unsuitable timber into the mines the cause of great waste—Such timbers thrown aside and lost in the gob—More system needed in ordering and delivering timber at the coal face.

NOT long ago, *Coal Age* writers discussed the question of cutting mine timbers to the proper length in the rooms, as compared with sending it into the mine already squared and cut. It seems to me that the argument in favor of cutting timber to length after it has reached the working face must come from men who have worked in mines where there was no system or discipline.

There is no doubt in my mind but that many accidents are caused by sending unsuitable timber into the mine, to be cut by the miner. It is seldom that a miner will lay aside his work of digging or loading coal and take the time to cut the timber needed. On the other hand, if the posts are already cut to the proper length it takes but a few moments for him to set the timber needed to secure the roof and make himself safe.

Aside from this practice being the cause of avoidable accidents, it is also the direct cause of a large waste of timber that is thrown into the gob for lack of time or tools to prepare it for use. Timber thus thrown aside is quickly lost sight of and is gone forever.

Scarcity and High Cost of Timber Causes Concern

Today, the cost of mine timber is becoming more and more a matter of concern. To reduce this cost to the lowest possible limit, it is necessary to curtail this waste of timber to which I have just referred. In no way, can that be done more effectually than by establishing a system by which suitable timber will be sent into the mine ready for use.

Close observation at a number of mines convinces me that the one thing most needed is an effectual system in this respect, as in other things in the operation of a mine. In my state, much trouble and inconvenience has been experienced in supplying the right kind of powder to the men.

In order to avoid the trouble, a system has been adopted in many mines more recently, by which each miner makes his order out on a duplicate check, naming the kind of powder wanted and signing the order. One part of this check goes to the office, while the other follows the powder, until it is delivered at the proper place.

System in Delivering Timber Needful

Now, if this system has been found to work successfully in regard to powder, why cannot a similar system be used in reference to the ordering and delivering of timber. At present, the trouble lies largely with the drivers. The timber is sent into the mine, perhaps, already squared and cut to different lengths. On its arrival at the inside parting, the drivers generally take the timber most convenient to them and haul it into the working places, without regard to where the different lengths should be delivered.

As a result, there is much of this timber that cannot be used where it is sent. The short sticks may be taken to rooms working high coal and longer sticks delivered to miners working low coal. When timber goes thus astray, it is practically lost, seldom if ever being reloaded and taken where it can be used.

In closing, let me say that it is just as important to systematize the delivering of timber, as it is to do this in supplying powder to the men. Where system is lacking, a post once set is generally not thought of again. How much could be saved by drawing and using again much of this timber instead of leaving it to be lost in the waste, as is commonly the case.

Linton, Ind. W. H. Luxton.

How Vagaries of Foremen Affect Cost of Production

Foremen dissatisfied lose ambition—Work suffers from lack of attention—Mine often damaged beyond repair—Cost of production increased in effort to restore the mine—New foreman unjustly blamed.

FROM time to time, mention has been made incidentally regarding the increased cost of producing coal, by reason of one thing or another. One writer, I recall, referred to the difficulty under which a new mine foreman labored when called to take charge of a mine that had been poorly managed by the man who preceded him. This, to my mind, introduces a fact that is well known to a multitude of mine foremen and which has an important bearing on the cost of production of coal in many mines.

When a Foreman Is Dissatisfied

A mine foreman becoming dissatisfied for any reason will often lose his ambition to make good. Under these conditions, the man who is not truly honest and has a sincere regard for the welfare of his company takes little interest in the matters of cost and production of coal. In the mine, conditions go from bad to worse, until the time arrives for the company to look for another foreman.

At two different times, it has been my fortune to be given charge of a mine where the previous foreman had fallen into disfavor with the company, for a considerable period of time before he was compelled to give up his position. It is remarkable the amount of damage that can be done to a mine in a short time when the foreman's interest wanes and he loses his ambition or desire to work in the interest of the company who employs him.

Frequently, it happens that a mine is damaged beyond repair, by reason of an indifferent foreman endeavoring to keep up the daily tonnage and reduce the showing on the cost-sheet by getting out cheap coal and doing no development work to provide for the future.

The Cost to the Company

The cost of such a man to the company is seldom fully revealed, until he leaves and is succeeded by a capable and honest worker, who undertakes to repair the damage done and restore the mine to a paying basis.

For a considerable period, it may be several months, there is much deadwork to be done in the way of retimbering the air-courses and driving entries, before rooms can be turned that will furnish a fresh supply of coal. In the meantime, the cost of operation mounts high and the management begin to wonder whether or not the new man is a success, notwithstanding his previous record in other places.

Just here, comes in the value of a practical superintendent who is thoroughly familiar with mining conditions. He is the only one who can explain to the satisfaction of the man-

agement the reason for the present high cost of production and defend the new man from being unjustly accused.

Without overstating the case, I believe it is a fact that many mining companies have spent thousands of dollars in replacing the damage done by incompetent foremen, or such as have lost their ambition to work in the interest of the company and are ready to resign at any time, or are looking forward to being discharged at an early date.

A New Foreman Meets Difficulties; Give Him a Chance

While I am a mine foreman myself and believe that a foreman should have a fair chance to make good, at the same time I firmly believe every foreman should do his best for his company, as long as he is in their employ. The foreman who will not do this should be punished in a way that he will remember. It would be a boon to mining if his name was to be published in coal-mining journals and his record made known to the industry.

The type of foreman I have mentioned not only subjects any company who may employ him to unnecessary expense, but he forces the man who follows him to assume an unjust burden, by reason of his previous lack of attention to the work in his charge. In my opinion, there should be some provision made by which the certificate of such a man should be withdrawn if he has one.

It is not necessary to guess what proportion of mine foremen are of this type, it is sufficient to know that there are such men in charge of some of our mines, and our efforts should be made to eliminate these as far as possible and rid the mines of the damage they cause.

Mayport, Pa. James Thompson.

Ability to Lead

Leadership is born in men—Confidence in one's self a factor—Close student of human nature—Personal contact with men insures mutual understanding.

Reading the letter of a "Western inquirer," which appeared in *Coal Age*, Dec. 29, p. 1055, one can but agree with him that it does seem, at times, as if the man who can put up the best talk is usually the one to get the job.

However, no man can successfully handle a coal mine who fails to gain the confidence and respect of his men; and the only way to secure that is through personal contact with the workers, which insures a mutual understanding on the part of each.

The day of the hard-boiled boss has gone and the mine manager who is to make a success now and in the future, must be a close student of human nature. He must know why Bill Smith will make a better tracklayer than Tom Jones, although Jones can do the work about as well, but has not the natural bent required in laying track.

Again, the boss must know how to bestow praise and when to blame a man In short, he must have a natural insight that will cause him to take the right stand, which the men will accept as just and fair.

Leadership is born in men. I would that "Western inquirer" could read the excellent letter of George Edwards, which appeared in the issue, Jan. 12, p. 52. Speaking of the successful boss, Mr. Edwards says he is "a leader of men, standing head and shoulders above the ordinary workman, mentally."

At the same time, the chief characteristic of this man is described as being "the favorable consideration he gives to all who come to him." Knowing himself, how to do the work in hand, he is able to meet his men on an even footing.

In other words, he is fitted for leadership by virtue of his experience. In regard to technical knowledge and training he must, of course, have that also and use it every day in the management of the mine and in his judgment of the work accomplished.

Our friend from the West has spoken of men "who are recognized as being popular, largely because they can tell funny stories." He seems to forget that we are all, more or less, grownup children and enjoy a good story.

As to that, let me say that there is nothing I know of which will relieve a tense situation and soften the feelings among a bunch of men who are working at a dangerous job, than a little harmless banter from the foreman.

Hillside, Ky. E. A. Comelte.

Inquiries Of General Interest

Problem in Geometry

Principles of Geometry Often Applied in Construction, Though More Frequently Still Found Useful in the Work of Surveying and Plotting, in Connection with Mining

In the course of my work in construction, a problem has arisen that seems simple enough in its nature but which I have been unable to solve and am taking the liberty of asking help from *Coal Age*.

Without going into the details of the actual case, the question resolves itself into showing that an ordinate, at any point of a chord subtending the arc of a circle, is a mean proportional between the perpendiculars dropped, from the extremity of the ordinate, onto the two tangents to the circle at the respective extremities of the chord.

For example, referring to the accompanying figure, *ACB* is the arc of a circle subtended by the chord *AB*, and *CO* is an ordinate at any point *O* of the chord. Then, from the outer extremity of this ordinate, draw *CD* and *CE* perpendicular to the tangents *AD* and *BE*, respectively. Then, I want to prove that the ordinate *CO* is a mean proportional between *CD* and *CE;* or, in other words,

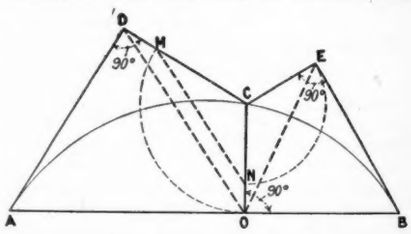
$$CD : CO : : CO : CE$$

If *Coal Age* will show the method of proving this proportion, it will assist me greatly in my work. Student.

————, Colo.

This is a simple problem in geometry. Referring to the accompanying figure the angles *DAO* and *EBO* are equal, being measured by the same arc *ACB*, according to a principle of geometry the angle between the chord of a circle and the tangent at either extremity of the chord, is measured by one-half of the arc subtended by the chord. Again, in the two quadrilaterals *ADCO* and *BECO*, each of the four angles, at *D*, *E* and *O* being right angles and the angles at *A* and *B* being equal to each other, the two remaining angles *DCO* and *ECO* are equal, each to each. Now draw the lines *DO* and *EO* forming the triangles *DCO* and *ECO*.

The next step is to show that these triangles are similar, in which case



their corresponding sides will be proportional. To do this, with *C* as a center, swing the triangle *ECO* in a clockwise direction, until the line *CE* falls on *CO*, making *CN* equal to *CE*. The line *CO* will then fall on *CD*, making *CM* equal to *CO*, since the angle *ECO* is equal to the angle *OCD*. The line *EO* will then take the position *NM*, which is parallel to the line *OD*, making the triangles *CMN* and *CDO* similar and giving the proportion

$$CD : CM : : CO : CN$$

But, by construction, $CM = CO$ and $CN = CE$, which gives the desired proportion.

$$CD : CO : : CO : CE$$

Let someone now prove that the lines *NM* and *OD* are parallel lines.

Examination Questions Answered

Miscellaneous Examination Questions

(Answered by Request)

QUESTION—*Assume that a miner is working in a room with top that will stand for a few days before a fall of slate would occur. The miner does not set props as he should. How would you handle the miner, assuming that he did not actually work under very loose slate?*

ANSWER—The miner should be given instructions to maintain constantly a row of props across the face of his room, at a specified distance from the face, say not to exceed 10 ft. As the face is advanced a second row of props should be stood, say 4 ft. inside of the first row, before any props in that row are drawn. He should be supplied with the necessary timber and, failing to obey these instructions should be made to suffer a suitable penalty, according to the judgment of the foreman in charge. He should be made to understand that the rule regarding the timbering of his place is absolute and must be obeyed.

QUESTION—*What is meant by a 2 per cent grade? What grade will cause a well oiled car to start in motion from rest?*

ANSWER—A 2 per cent grade is a grade that rises a vertical height of 2 ft. in a horizontal distance of 100 ft. The grade on which a well oiled car will start from rest, will depend not only on the kind of bearings with which the car is equipped, whether plain or roller bearings, but also on the size and kind of wheels and the condition of the track. On a well ballasted track laid with good iron and using cars having 12-in. wheels with roller bearings in good condition, a car will tend to start from rest on a grade of approximately one-half of 1 per cent, which corresponds to a track resistance of 10 lb. per ton of moving load. With plain bearings, under like conditions of wheels and track, a 1 per cent grade may be required to start the car. This will correspond to a track resistance of 20 lb. per ton of moving load. Cars with smaller wheels and with track in poor condition, the starting grade may increase to one and one-half or even two per cent, corresponding to 30 or even 40 lb. per ton of moving load.

QUESTION—*What form of airway will give the most air with the same power, and why?*

ANSWER—For the same length of airway that form which presents the smallest perimeter, for the same sectional area, will pass the largest quantity of air, under the same power. On that basis, the circular airway comes first; the ellipsoidal airway next, until the major axis of the ellipse exceeds 2.73 times the minor axis. In that case, the perimeter of the ellipse is equal to that of a square airway having the same area. Then, the square airway is third, in the list, and the rectangular or trapezoidal form last.

QUESTION—*How and where would you construct and ventilate a stable in a mine?*

ANSWER—First, the stable in a mine should be located in a solid pillar of coal, at the nearest convenient point to the workings, and close to a shaft or other mine opening through which the mules can be rescued promptly in an emergency. Second, the stable and its furnishings must be constructed wholly of incombustible material. Even the face of the coal should be treated with a good coating of gunite, which will preserve the coal and keep it from firing. The stable should be well drained and have a hard concrete floor. It should be ventilated by a scale of air taken from the main intake and discharged, after passing through the stable, into the main return airway. The location of the stable near a mine opening will facilitate the handling of feed and refuse to and from the stable as well as the hasty removal of the animals in case of emergency or disaster.

QUESTION—*A mine car is 6 ft. long, 4½ ft. wide and 2 ft. high; if 12 in. of topping is allowed, how many tons of coal will this car hold?*

ANSWER—The cubic contents of this car, including the topping, is $6 \times 4\frac{1}{2} \times 3 = 81$ cu.ft. It is customary to allow 40 cu.ft. of bituminous coal to a short ton, or the same amount to a long ton of anthracite. The capacity of this car is therefore, say 2 short tons of bituminous coal or 2 long tons of anthracite.

QUESTION—*If you have 250 diggers, in a mine using electric haulage, how many cars in your judgment will be necessary?*

ANSWER—Assuming an average of, say 2½ tons of coal per man, per day, the output of this mine should be $2\frac{1}{2} \times 250 = 625$ tons. Then, using 2-ton cars, the number of cars in use will depend on the length of haul or the number and size of trips that can be made in a day. Again, assuming a single electric locomotive, making twelve trips a day and hauling $625 \div 12 =$ say 52 tons a trip, the number of cars in the trip being 26, there should be one trip of cars in the mine, loading, another trip in transit, and another on the tipple in course of being dumped, making $3 \times 26 = 78$ cars in actual use, for hauling coal. Besides this number, allowance should be made for, say 25 more cars loaded with timber and other supplies and, perhaps, about the same number in need of repair or standing in rooms that are idle. This would make the total estimate of cars needed for the operation of this mine, say 125 cars.

QUESTION—*With a fan running at uniform speed (r.p.m.), what conditions may develop that would change the mine-air pressure?*

ANSWER—The pressure on the mine air is due to the resistance offered by the mine airways to the passing of the current and is measured by such resistance. While it is true that the mine pressure is *created* by the action of the fan, it is *caused* by the mine resistance. Without this resistance, as when the fan is discharging directly into the atmosphere, there would be no pressure on the air. It is clear, therefore, that the mine airways have a certain resisting power, which depends on the extent of their rubbing surface and the velocity of the air current, always assuming there is no obstruction present in the airways that would increase the resistance.

With the fan running at a constant speed, anything that increases or decreases the resistance of the mine will cause a corresponding increase or decrease of mine pressure in the fan drift, as indicated by the reading of the water gage at that point. For example, a fall of roof may so reduce the sectional area of the airway as to obstruct the flow of air. This would correspond to an increase in the mine resistance and will cause a rise of pressure in the fan drift. On the other hand, should a door between the main intake and return airways be set open, the air current will be short circuited at that point and the mine resistance correspondingly reduced, which will be followed by a fall of pressure in the fan drift.

QUESTION—*What effect, if any, has mine ventilation on roof conditions and what method would you adopt to remedy or prevent it?*

ANSWER—The flow of air through mine airways frequently has a disintegrating effect on the roof of the airways, depending on the nature and susceptibility of the roof stratum to the action of the air. This is particularly noticeable where the roof strata contained water, which is evaporated by the air current as it seeps through the roof. The cutting action of the air current is more noticeable at the ribs supporting the roof, where the pressure is most felt and assists in breaking up and disintegrating the strata at that point.

Where the roof of an entry "cuts," as we say, or is cut by the action of the air current, there is no practical remedy to apply to prevent it, except by leaving a foot or so of roof coal to be taken down when drawing back the pillars. Leaving this coal for the protection of the roof will depend on the thickness of the seam and the character of the coal. It will not always be possible to apply this remedy.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

GENERALLY speaking a business has done well to make the transition from the high level of prices to the low level now prevailing without either loss or profit, according to a bulletin on business conditions issued by the National City Bank of New York. "It cannot yet be confidently said that the bottom has been reached in all lines," the bulletin continues; "on the contrary, there is reason to believe that in manufactured goods costs have yet to be materially reduced. On the other hand, the industries that have to do with primary products probably are on safe ground.

"No marked change has appeared in general business conditions. The outlook for house-building is better than for any other construction work and is counted quite promising. There is some giving way in prices of materials and of wages.

"The iron and steel industry is about as in December, which showed some falling off from the fall months. The output of pig iron in the year 1921 was 16,670,000 tons, the smallest since 1908. In 1920 the production was 36,925,987 tons and the average for 10 years was 31,566,355.

"The railroad labor situation would be ludicrous if it were not so serious. The rates fixed by the Labor Board for common labor are so far above those prevailing outside of the railroad service that the companies are finding it practicable to contract out much of their work and save 20 to 30 per cent, which of course is after the contractors make a profit.

"The processes of readjustment are working slowly, but undoubtedly progress is being made in restoring the industrial balance which is necessary to full industrial activity.

"Coal shares with railroad charges a greater responsibility for the industrial depression than is borne by anything else. The situation will not be righted until transportation and fuel are both cheaper. The remedy for the distress of the coal miners is not in higher wages and dearer coal but in cheaper coal and steadier employment. Nothing but disappointment will come from blind disregard of economic law.

"In so far as the prospect for better prices is due to a general restriction of production we do not believe it signifies a real improvement of conditions. Higher prices will make living costs higher for the town population and tend to retard the readjustment of wages in the town industries, while the farmer can gain but little by higher prices for a reduced output.

"What the workers in all the industries really want in the last analysis is plenty of each other's goods, and that is not to be had by the narrow policy of restricting production in order to put prices up on each other."

Freight Loadings Still Gaining

Cars loaded with revenue freight during the week ended Feb. 4 totaled 753,886, compared with 743,728 during the previous week, or an increase of 10,158, according to the American Railway Association. This was 54,168 cars more than were loaded during the corresponding week in 1921 but 8,794 less than during the corresponding week in 1920. Coal loadings totaled 185,151 cars, a gain over the preceding week of 4,185 and 27,597 above the total for the corresponding week last year.

Glass Factory Reopens

The Greensburg Glass Co., Greensburg, Pa., after several months of idleness, has resumed, and the management expects to keep a force of men at work all summer.

Reading Places $5,000,000 Order

Orders for $5,000,000 worth of new equipment were placed Feb. 13 by the Philadelphia & Reading Railway Co. The orders call for fifty passenger coaches and 2,000 steel coal cars of seventy tons capacity. The Wilmington (Del.) plant of the Bethlehem Steel Co., will build the passenger coaches. The order for the coal cars has been distributed among plants in Middleton, McKees Rocks, Johnstown and Berwick, Pa.

Typewriter Plant on Full Time

The L. C. Smith & Bros. Typewriter Co. put its plant at Syracuse, N. Y., on full time last week. The factory schedule dropped to four days a week last July. This was increased to five days last month.

Navy Yards Lay Off 4,268

Employes released at navy yards and other plants by the suspension of capital ship construction now number more than 4,000, but no further material reductions are expected, the Navy Department announces. Reports from navy yards and other points give the number of men laid off as follows: Norfolk, 118; Washington, 1,350; New York, 400; Philadelphia, 450; Mare Island, 1,500; South Charleston (W. Va.), armor plant, 450; total, 4,268.

Lincoln Auto Plant to Speed Up

The Lincoln Motor Co. plant at Detroit reopened Feb. 6 with a force of 600 men following its purchase at receivers' sale by Henry and Edsel Ford. An announcement issued by the company stated that production would be speeded.

50,000 Textile Workers Strike

Between 40,000 and 50,000 textile operatives in New Hampshire and Rhode Island, it is estimated, are out of work as a result of strikes called in protest at 20 per cent reductions in wages and increases in the working week from forty-eight to fifty-four hours. Half of the 200,000 cotton mill operatives of New England now are on reduced wage schedules. In New Hampshire the strike is practically Statewide. Two mills in Lowell, Mass. closed Feb. 14.

New Wire Mill in Duluth

A new wire rod, wire, and wire nail plant has been constructed at Duluth by the Minnesota Steel Co., a subsidiary of the United States Steel Corporation. The plant will be ready for active operation by next June. It will have a capacity of about 300 tons per day of various wire products. The new plant is modern in every particular and its location is exceptionally favorable for the trade in the Northwest, as well as for export business from the Pacific coast.

Miners' Convention Adopts "Suicidal" List of Demands

Rebels Assault Lewis Administration in Indianapolis Session and Put Through Five-Day Week and Six-Hour Day Program—Howat Case Is Lost After Bitter Fight—Farrington Appears More Formidable Than Ever

BY E. W. DAVIDSON

THE radical element in the United Mine Workers of America almost upset the reconvened session of the twenty-eighth annual convention, at Indianapolis, which ran from Tuesday morning until late Saturday, Feb. 14-18. On a roll call it came within 121 votes of forcing the Lewis administration to consider the case of Alexander Howat and it scrapped the "conservative" eight-hour day program and put the six-hour day, the five-day week and some new war-like language into the list of demands the miners' organization must make to the coal operators of the country between now and April 1, the date set for a general mine strike in the event of failure to reach an agreement.

Altogether, the rebellious element, directed covertly by Frank Farrington, president of the Illinois district, raised such a hubbub beginning the second day of the session, and rolled up such monumental voting strength from first to last that the administration was staggered. The Lewis forces managed to bar the Howat Kansas case from the convention schedule, thus maintaining the position taken by the International organization last fall, when Howat and his entire group were booted from the union, but the fight was hard and the roll call vote, read as one of the last acts of a most troublous session, gave Lewis but 2,073 to 1,952 for the opposition.

LEWIS AND FARRINGTON ACCUSE EACH OTHER

After the convention adjourned, amid a tremendous din, Farrington charged that the session had been forced to a close by Lewis without giving the rebels a chance to protest a good many of the votes cast for the administration in the roll call. He charged that the administration had padded the lists. Furthermore he declared that President Lewis was not only tottering on the throne but had already fallen.

Mr. Lewis, for his part, charges the Farrington gang with cramming the convention with "hundreds of men of Illinois and Kansas who were not delegates" and with bringing an element to the session which had no other object than to smash things up generally by whatever means came most easily to hand. He told the convention the movement against him had even degenerated into a campaign of terrorism. He said he had received "hundreds" of black hand letters within ten days before the session, all telling him that it had been decreed at secret conclave that if he dared preside, he would be killed.

All in all, the convention was the most rebellious since 1910, when the International officers, for their own protection, established the now famous "seventh row," which was filled with huskies who rose and threw back every wave of men who tried to reach the stage. Nobody rushed the stage this time, but much abuse was hurled up from the floor at the officers and the will of the administration in decisions of the convention was often trampled.

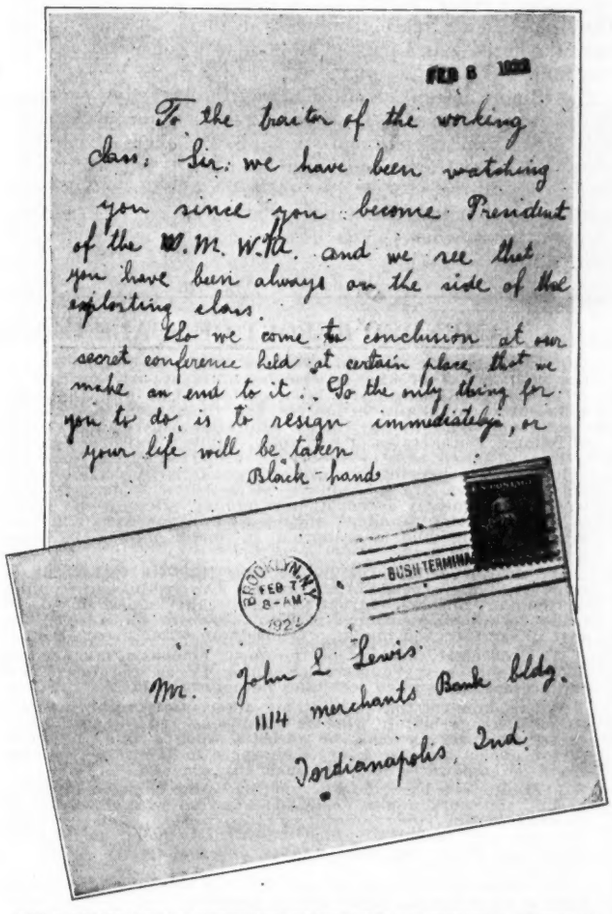
In spite of warnings that radical demands for such things as a six-hour day and a five-day week would prove suicidal to the United Mine Workers of America, the convention was bent upon demanding those very things and the demands were forced through by heavy majorities in standing votes. No roll calls were taken on these matters.

Thus the action of the convention appears to have nullified many efforts of the International officers to frame a program of demands which would appear to the country as "reasonable." However, President Lewis, in a short statement issued just after the stormy close of the session, said he was "convinced that the overwhelming majority of the mine workers throughout the various districts are desirous of following sane policies. The membership has been sadly misrepresented by the many men who are responsible for the disorder which reigned. But the attempt to terrorize and stampede the convention miserably failed. The organization will now be able to go forward with its wage policies and apply itself to its proper affairs.

"In conformity with the plan laid down by the convention," his statement concludes, "I shall, in a few days, issue another call to the operators of the Central Competitive Field for a meeting at an early date to work out a wage agreement, if possible."

Farrington was a member of the scale committee which drafted and signed the original "conservative" report, and said before the convention opened that he was satisfied with the report and "would not oppose it." He didn't—publicly.

The International officers called this reconvened convention to finish the work begun in the regular convention last fall. The entire business was to be the framing of a set of wage demands.


FEB 8
To the traitor of the working class. Sir. we have been watching you since you become President of the W. M. W. A. and we see that you have been always on the side of the exploiting class.
So we come to conclusion at our secret conference held at certain place that we make an end to it. So the only thing for you to do is to resign immediately, or your life will be taken
Black-hand
BUSH TERMINAL
FEB 7
8-AM
Mr. John L. Lewis
1114 merchants Bank bldg.
Indianapolis Ind.

"BLACK HAND" LETTER RECEIVED BY JOHN L. LEWIS

They prevented the reopening of the case for Kansas, a district in which practically every local charter was revoked and District President Howat and all his officers ousted last fall for failing to call off a strike when ordered to do so. Howat, out of prison under an appeal bond, was allowed to take the platform and tell the convention why it should reopen his case, but he was not permitted to digress for an attack on the Kansas Industrial Court, and in the showdown his plea was denied.

After Howat had spoken and President Lewis had defended the International in ousting the whoe Howat clique, a roll call was ordered. Two days' delay was obtained while voting

lists were prepared. This gave the rebels two extra days for missionary work and little else transpired in the convention because the administration would not permit the scale question to come to a vote until it was determined who had a right to cast ballots. The administration got the Howat matter out of the way and the full list of administration delegates from Kansas officially seated before the scale report came up.

To that extent the administration controlled the convention. But it could not prevent the radical element from injecting a good deal of its belief into a union program that was to have been "conservative."

Frank Farrington's protest session Sunday afternoon in Indianapolis did not result in the formation of an outlaw union, as was proposed. Farrington declared that not only had he no intention of trying to split the union now or hereafter but that he would fight any man who tried it. He said that he will keep his pre-convention promise to support the International officers in whatever efforts they may make to get a new wage contract for miners, but, he said, "I don't think they've got any program now that the convention has upset the scale committee's report."

Farrington and Harry Fishwick revealed that on the day before the convention they had told Lewis that if he would advise the convention to reopen the Howat case and reinstate Howat and his crew of outlaw strike leaders, the scale committee's report would not be opposed in the convention. They said Lewis merely sneered at them, so they turned loose the horde which blasted all hope of a conservative scale program.

The Illinois delegation voted to pay the traveling expenses of the Howat men who came to the convention in the hope of winning back their union standing, and pledged itself to crusade for the Howat cause "at least until April 1." Farrington was directed to write "the true story of the Kansas case" and get it into the hands of every miner. Farrington professed that when this is done, the union administration will collapse.

The Howat-Lewis Debate

THOUGH President Lewis succeeded in staving off the Howat fight for a day, the clamor of Howat sympathizers became so insistent on Wednesday that a clash could no longer be avoided. Howat spoke first, whereupon Lewis replied. The standing vote, which followed, resulted in 864 for Howat and 977 opposed. The roll call, demanded by the Howat cohort, was taken Friday, and also resulted unfavorably to the deposed Kansas leader, by 2,073 to 1,952.

Howat spoke about half an hour, trying in vain once to shift the attack to the Kansas Industrial Court law, and President Lewis spoke for about an hour. The convention listened rather quietly to Howat, after the president had accorded him the privilege of the platform, but Lewis was booed loudly when he stepped forward and there were frequent interruptions, which Vice-President Philip Murray had to suppress from the chair. When the two speakers finished, the Howat forces, on a standing vote, won the right to a roll call on the question of whether the convention should consider the matter of Howat's ousting from the union and the revocation of the 72 Kansas local charters.

"I trust we men from Kansas are going to get a square deal from this convention," began Howat, who addressed the convention as "fellow delegates," though the chair persistently called him "Mister" Howat and not "brother" or "delegate." He then reviewed the Kansas situation at the Deane and Reliance mines. "Brothers Steele and Dalrymple came out there and made a so-called investigation," he said. "Then they asked us to go back to work. We were willing at all times to go back under the old conditions, but we refused to do so under the new conditions, such as the operators had imposed.

"In the review of the situation which the International made here in Indianapolis, the officers persistently took the word of the Kansas operators against the miners from Kansas, and finally rendered a decision against us with no investigation at the Reliance mine whatever.

AMENDED REPORT OF SCALE COMMITTEE, ADOPTED BY THE CONVENTION

1. We hold that the mine workers employed in and around the coal mines of the American continent are entitled to receive as compensation for labor performed an annual income sufficient to maintain themselves and their families decently, comfortably and in accordance with the American standard of living. The dictates of humanity, public interest and public welfare demand this be made the preferred claim upon the industry. The present annual earnings of the coal mine workers of America are inadequate—much below a decent living wage—consequently a reduction in mining prices would result in a lower living standard among all mine workers and poverty, suffering and degradation in many mining localities throughout the land.

We do not believe the public asks that its fuel needs be supplied at the expense of a degraded citizenship, accompanied by human misery, starvation and want superinduced by inadequate annual earnings paid to those who mine coal. The cost in sacrifice and human wretchedness is too great.

We, therefore, declare in the most emphatic manner our opposition to any reduction in mining prices and insist that the present basic wage schedules be maintained.

We recommend that inequitable differentials within and between districts, unfair working conditions and internal differences, wherever existing, be adjusted upon a fair and satisfactory basis and the joint conferences in the respective districts be empowered to make such adjustments.

2. Mining is a hazardous occupation. Men engaged in underground toil work under conditions carrying with it an intense nervous strain superinduced by the constant and countless injuries and fatalities which occur and under atmospheric conditions which sap their vitality and make them victims of occupational diseases.

We therefore recommend that all new agreements be based upon a six hour day and a five day week.

3. Where emergencies require such service, overtime shall be paid for at the rate of time and one-half, with double time for all work done on Sundays and legal holidays.

4. We demand that the mine workers' representatives put forth their best efforts to secure a clause in the next agreement providing for the weekly pay.

5. Because of the abuses to which it has been subjected, we demand that the automatic penalty clause be eliminated from the wage agreements.

6. That this convention go on record as favoring the ratification of the wage demands made by the anthracite miners in their tri-district convention, which was held in Shamokin, Pa., from Jan. 17 to 20, 1922, inclusive, and that we pledge to the anthracite mine workers our power and influence in aiding them to the fulfillment of their demands.

7. We recommend that the next wage scale cover a period of two years, beginning April 1, 1922, and ending March 31, 1924.

POLICY

On March 31, 1920, the coal operators of western Pennsylvania, Ohio, Indiana and Illinois, comprising the Central Competitive Field, agreed to the following provision:

"Resolved, That an interstate joint conference be held prior to April 1, 1922; the time and place of holding such meeting is referred to a committee of two operators and two miners from each state herein represented, together with the International officers of the United Mine Workers' organization."

This agreement was entered into in good faith and the coal operators must either carry it out or stand publicly charged with breach of contract. The mine workers' representatives regard this agreement as a moral obligation just as binding as any legal obligation ever assumed and therefore stand ready to discharge it by meeting the coal operators' representatives in joint conference for the purpose of negotiating a wage agreement. Notwithstanding a refusal heretofore made by the coal operators of western Pennsylvania and Ohio, parties to this agreement, to meet in interstate joint conference, we instructed the International officers to call upon the operators of the Central Competitive Field to comply with the agreement they honorably made by meeting in joint conference at as early a date as possible for the purpose of negotiating a wage agreement to become effective when the existing contract expires.

The committee further recommends that the president of the International Union and the presidents of Districts 1, 7 and 9, comprising our anthracite jurisdiction, make arrangements for holding a joint conference with the anthracite coal operators at a mutually convenient time and place for the purpose of negotiating a new wage agreement for the anthracite fields.

The present contract between the coal operators and the United Mine Workers of America in both the anthracite and bituminous coal fields terminates on March 31, 1922. In the event no agreement is reached by April 1 we declare in favor of a general suspension of mining operations, such action being subject to a referendum vote of the membership of the United Mine Workers of America to be held prior to March 31.

For the purpose of meeting in a practical and constructive way all unforeseen emergencies which may arise, a policy committee, composed of the scale committee of the Central Competitive Field, three representatives from each of the outlying districts, members of the International executive board and the International officers, is authorized to take such action for the protection of our best interests as circumstances may require, and to advise the membership upon unexpected developments.

When an agreement is consummated in the Central Competitive Field the outlying districts shall be authorized to enter into joint negotiations for the purpose of concluding wage agreements in conformity with past custom and procedure. Such agreement shall run concurrently with the basic agreement in the Central Competitive Field.

Any wage scale negotiated must be submitted to a referendum vote of the membership affected for approval before it is finally accepted.

JOHN L. LEWIS AND TWO LOYAL CO-WORKERS
At the left is the International president; center, William Green, secretary-treasurer; right, Philip Murray, vice-president.

"Then came the convention last fall. I was vilified by all the International officers and could not get the floor for a reply. But during that convention President Lewis, in answer to a direct question from me, said the miners of Kansas were to go back to work only under the old conditions and that the International would stand back of us to secure them. I went back to Kansas, and it was then that I ordered the men to return to work. But the operators would not have it. They insisted upon the new conditions. We claim, Mr. Chairman, that we did what we were instructed to do and all that any fair-minded man could expect us to do.

"The constitution of the organization provides that the next court of appeal above the executive board is this convention. So we have brought our appeal here. If the executive board is upheld in this case, this is going to be a one-man organization in the future. I hope you won't be influenced by some technicality Lewis may raise. The question before this convention is: Are we going to get a fair and impartial trial? The coal operators of Kansas tried for 15 years to beat me. Now they are getting you men to do it for them."

President Lewis in his reply said:

"I shall not undertake to discuss the merits of this controversy other than to refer to certain features mentioned by the previous speaker. The merits of the controversy are not before the house. I am assured by what I consider to be reputable and responsible authority—a delegate who presumes to speak for and who espouses the cause of the gentleman who is taking the appeal—that there are in this convention 125 men from the State of Kansas who have come here under an organized arrangement not only to disturb the deliberations of this convention and cause confusion in its ranks but to do anything that may be possible to prevent the carrying out in a proper way of the laws of the organization.

"I don't know how many of these 125 men who are sitting in this hall, given the courtesies of the convention, may have been engaged in this organized plot of terrorism which has been carried on in the last ten days or so against the president of United Mine Workers of America. Day by day, mail after mail, I have been receiving letters telling me that if I presumed to preside over this convention —that unless I resigned as President of the United Mine Workers—it had been decreed in secret conclave I would die.

"The question before the convention this morning is the question of the validity of an appeal now filed asking special consideration by the convention of matters pertaining to the revocation of the charter of District 14 and the reorganization of that district by the International union. They say they want a trial, that all they ask is justice, when as a matter of fact for nearly ten months back the International has been doing nothing in the Kansas situation but holding continual trials.

"In the first place, an investigating commission was sent to Kansas to hold a trial on the ground and make an investigation of the real facts in the Deane mine controversy. The committee found that the mine was idle in violation of the contract.

"Later on, the International executive board summoned all parties to the controversy to appear for a hearing in Indianapolis. Representatives of the Southwestern Interstate Coal Operators Association and representatives of District 14 appeared. The decision of the committee of the International executive board had never been given consideration by the officers of District 14.

"After a four days' hearing, with thirty men sitting on the International executive board, by unanimous vote they held that the mines were idle in violation of contract, that they should be put to work, and that the grievances should be taken up and adjusted in conformity with the provisions of the contract. Further, the International executive board offered to the officers of District No. 14 the full influence and co-operation of the International Union in securing an equitable adjustment based upon the rights of our people under the contract.

"The decision of the board was not complied with by the officers of District No. 14 and that made the second trial that has been had upon that matter. That decision was rendered some time in advance of the convening of the International convention in September, and, feeling that if a convention had an opportunity to pass upon the question with a full and free discussion from all parties at interest it might have a helpful effect upon the officers of District No. 14, the matter was brought up in the report of the president.

"You men were here and heard the Deane and Reliance controversy discussed; you know that representatives of District 14 were given the privilege of the floor. And when the convention decided that question I was of the opinion that surely the officers of District 14 would obey the ruling of the International convention.

ALEXANDER HOWAT FLANKED BY TWO SYMPATHIZERS
At the left is John Rolando and at the right is Joe Bresso

"The action of the convention was but a few hours old when there appeared in the daily newspapers of the country an interview saying that the action of the convention would make no difference to the Kansas officers; that they proposed to continue their policy and that they would no longer regard the International organization's ruling as being binding upon them.

"Now at this time, after practically five months, we find that an appeal to this convention was taken only yesterday. Yes, filed now with the intention of securing a possible consideration under dramatic and sensational circumstances when men will not give due consideration to the facts.

"But the aggrieved parties had time to file an appeal in the Circuit Court of Missouri for an injunction against the United Mine Workers of America, and this in violation of the section that provides that a man who goes into the civil courts before exhausting his right of action under our own law will forfeit his membership.

"If in those legal proceedings they had won, do you think they would be in here asking for an appeal today? No, they would be standing up on the housetops of Kansas proclaiming that victory was perched upon their banners.

"I think they made an error of judgment in selecting the court. If they had come to Indianapolis they could have secured the injunction in Judge Anderson's court. However, that is merely one of the errors. It is an error of judgment to enter this convention at this time, when the future of the United Mine Workers of America is at stake and when the eyes of the trade union movement of the country are looking forward to the industrial conflict that seems inevitable. Upon the eve of ordering an advance upon the enemy the army is now asked to halt and wash out its dirty linen, to stay the advance while the generals of the army undertake to demonstrate to their forces who is the greatest scoundrel. What a sight!"

Disastrous Defeat for Miners in Event of Strike, but Operators Are Over-Optimistic, Is Washington View

BY PAUL WOOTON
Washington Correspondent of *Coal Age*

ON paper it would seem that the United Mine Workers face a demoralizing defeat if they go on strike on April 1, but those who are following the situation closely in Washington point out that there is increasing evidence that various uncertain factors are likely to arise. It is by no means safe, they say, to take it for granted that the strike will not amount to much. They point to the strike of 1894, when the United Mine Workers had only 50,000 members. Nevertheless one of the greatest industrial disturbances in the history of the country revolved around that nucleus. There is a parallel in the present situation in that the switchmen and maintenance of way employees of the railroads are aggrieved and are ripe for participation, formally or by indirection, in this strike. It is admitted that there is much uncertainty as to how far the strike influence may penetrate into borderland and non-union territory.

This sentiment is not present among the operators. They are firmly convinced that the strike will not amount to much. They are sure the country will not feel it if the union mines are closed for two months. Their optimistic public expressions reflect their real views, as may be judged by what they say in private. It is evident that the country is taking the same view of the situation. Congress has shown little interest in the matter and many financial and commercial services are advising their customers that coal will be cheaper after this flurry has passed.

Few coal specialists in Washington share this view. They rather expect a serious situation to develop and fail to see the reasoning behind any advice against laying in as large supplies as can be carried reasonably. Even if the Interstate Commerce Commission authorizes a reduction of rates and if the miners go back to work at a lower rate of pay, it hardly is to be expected that it will reduce more than $1 per ton the price the consumer pays for coal. If stocks were increased to the maximum of the war period, which was 63,000,000 tons, as compared with 47,000,000 tons now in storage, it would only mean that the coal consumers of the nation had paid $16,000,000 for insurance against a general demoralization of industry with all its attendant disastrous ramifications.

Even if the strike threat should fizzle out, this $16,000,000 is insignificant when compared with the staggering price which England had to pay when wages in the coal industry were reduced from the war basis. Industrial paralysis extended over three months. There was one whole month that not a pound of pig iron was produced in England. There was a runaway market and the rationing of coal on a stricter basis than during the most critical period of the war. It is the opinion of officials with vision—men charged with the welfare of the whole people—that the accumulation of stocks of coal at this time practically will insure the country's ability to continue in the orderly course of its industrial way. If the consumer wants to be anything other than the innocent bystander who is hurt, he must assume some of the cost in meeting a situation of this kind. If he insists on gambling on the possibility that he can get by with his present stocks and buy his coal cheaper at a later date, he is contributing to the possibility of serious interference with the country's industrial activities.

It is particularly difficult to understand the attitude of the large consumer—frequently a man who thinks this is the time to tell labor "where to get off"—who is willing to speculate with his coal supply when that course enhances the chance of the strike's success. Economists in Washington are of the opinion that the United States is getting out cheaply in the readjustment of coal wages if it has no other cost than that represented by some surplus stocks of high-priced coal.

As was shown by the recent stock report, large consumers as a whole, and particularly the railroads and the public utilities, are storing coal. This policy was based on business reasons and was formulated by men well schooled in the buying of coal. It is hoped that consumers without buying organizations will follow the example being set by those who have given the matter careful study.

Eugene C. Hultman, Fuel Administrator for Massachusetts, has written to officials in Washington asking whether or not New England should lay in heavy additional stocks at this time. It is safe to predict that he will be advised along the lines reflected in the foregoing paragraphs.

The administration apparently believes that the thing to do at this juncture is to keep still. If any plans are being made they are not leaking out. There is reason to believe, however, that the Attorney-General will not hesitate to employ the injunction weapon, if the need for it should arise.

It is known that the administration is not impressed with the Kenyon proposal which has taken legislative form following his report on the West Virginia situation. On Capitol Hill no particular significance is attached to the Kenyon bill. It is regarded as being the logical rounding out of Senator Kenyon's activities in connection with the Mingo investigation. There can be no denying, however, that under present circumstances pressure behind the Kenyon bill could develop very quickly. As the strike looms nearer there is likely to be popular clamor for action. Also there are indications that the miners see possibilities in government interference in the situation. When these indications are taken into consideration, the Kenyon bill cannot be regarded as anything other than a sleeping volcano, likely to awaken even if its author may have retired from the Senate.

Says Continuance of Present Wages Would Mean Disaster to Southern Ohio Field

ADOPTION of the mining scale proposed by the United Mine Workers would mean economic disaster to, if not the entire elimination of, the coal mining fields of southern Ohio, according to W. D. McKinney. Among other things he says "The operators of southern Ohio have no control over the wage scale which they must pay. The public in the final analysis is the tribunal that must fix wages. Southern Ohio and the markets it serves form the gateway through which all of the coals of West Virginia, Kentucky and Tennessee must pass and the public takes its choice of the product of these fields in the passing and will not purchase coals mined in southern Ohio unless these coals meet the competitive situation.

"Our organization has pointed out at various times the abnormal losses in the coal production of southern Ohio under the present wage scale, which we understand is the same now proposed to be continued after April 1, 1922, by the United Mine Workers who in addition thereto have attached working conditions which will still further increase the labor cost.

"The coal production of the United States in 1921 was 75 per cent of the average for 1917, 1918, 1919 and 1920, which was a better record than most other industries made. Compared with 75 per cent for the country, production in the southern Ohio field was but 45 per cent of its average production for the same period.

"Southern Ohio operators cannot sell the product of miners in the open market under the present wage scale. The public will not pay the price, and the mines are idle."

Powder Company Reduces Prices

THE Hercules Powder Co. announces a reduction of prices on high explosives, permissibles and "B" blasting powders. The new prices are effective as of Feb. 17.

Mining Company Issues Frank Statement on Miners' Wages and Working Conditions

THERE is nothing new or startling in the following statement from a coal company president to his employees, but it is a good sample of what coal operators can well state and restate to their union labor in the next few weeks:

"To the employees of The Kathleen Mine:

"There are two factors that must be taken into account when wage rates are mentioned: The rate of wage paid and the opportunity to secure a day's work. The comparison of wages paid shown on the reverse side speaks for itself.* The real question concerns the opportunity to earn the rate of wage paid.

"In 1921 the United States produced 407,000,000 tons of soft coal, or 10,000,000 tons less than was produced in 1910, although we had nearly 14,000,000 more people to use coal in 1921 than we had in 1910. What was the matter? Industrial stagnation. Idle men, factories and steel mills, closed, railroad-car, locomotive and repair shops shut down. There are as many railroad employees out of service today as there are men in the coal mines. On Dec. 31 there were 618,675 freight cars standing idle in the United States. This is our condition today and it will so remain until:

"1. The cost of producing all the nation's coal is reduced.

"2. The cost of transporting freight is reduced.

"3. The wages of building mechanics in the large cities is reduced.

"These are the three outstanding items that prevent the return of prosperity. When they are adjusted, living costs will come down and we will go ahead, and not until then. This suggests that with labor representing 72 per cent of the cost of coal, the remedy for high costs must be found in a lower mine wage scale; the railroads and their employees are now discussing a further reduction in wage scales and the Interstate Commerce Commission is conducting an extensive rate reduction hearing.

"Building mechanics in the cities will either accept lower wages or lose the benefit of their organizations, which will be supplanted by the open shop. This company does not seek to destroy the miners' union; we prefer a sound rational organization to dealing with a mob in matters of wages and work. We ask now that you study not only the statements given you from union sources but all the facts bearing on our industrial situation. We, with you, can mine coal, but unless some third party will consent to buy, use and pay for it, neither of us can work and, most of all, none of us here wish to go to the Southern, Southeastern and Western mines to work for a wage that might prove too low to feed, clothe and educate yourselves and your families. With sound reasoning and good teamwork we can keep Illinois markets for Illinois mines. Talk the matter over with your friends, not forgetting your wives and your mothers.

Very sincerely yours,
"UNION COLLIERY COMPANY,
"By Eugene McAuliffe,
"Jan. 30, 1922. President and General Manager,"

C. T. Starr Heads Chamber of Commerce Coal Bureau; Activity Planned

WITH the appointment of C. T. Starr as chief of its coal bureau, the Chamber of Commerce of the United States expects to increase its efforts to be helpful to all concerned in the coal trade.

Mr. Starr is a native of Chester, Pa. He was educated in the public schools of that city and received his technical education as a part of the course in the Military College at Chester. He is both a mining and civil engineer. Immediately following his graduation he devoted his entire time to civil engineering and was a member of the engineering staff on several important Pennsylvania railroad, electric line and public works developments. In April, 1901, he decided to devote his chief attention to coal mining and has been engaged actively in that industry since, with the exception of the time that he was in the military service. So that he might know the coal mining business from the ground up, he began his work as a laborer in mines in the Pocahontas fields. Later he joined the engineering staff of the Norfolk Coal & Coke Co. Afterward he served for a year as a superintendent for the White Oak Coal & Coke Co.

Mr. Starr's next experience was with the Lehigh Coal & Navigation Co., which he served successively as assistant mining engineer, assistant division superintendent, assistant mechanical superintendent, superintendent of preparation, and, finally, superintendent of the construction department.

In 1912 Mr. Starr was employed by the Treverton Colliery Co. at Shamokin, Pa., as general superintendent. He filled that position until he entered the military service in September, 1917. As major of engineers he assisted in the organization of the forestry and quarry regiments. He accompanied the 28th Engineers to France. On his discharge from the military service in 1919 he accepted the position of chief engineer for the Weston Dodson Co.

It is not Mr. Starr's intention to inaugurate any new studies but rather to attempt to popularize, as well as to induce those concerned to put into effect, some of the many helpful suggestions that have been made by various agencies which have studied the needs of the coal industry.

*This table appeared in *Coal Age*, Jan. 5 p. 19.

In Appeal to U. S. Supreme Court Howat Attacks Kansas Industrial Tribunal

TWELVE points of attack are leveled against the Kansas Court of Industrial Relations in the brief of Alexander Howat and other Kansas mine leaders in their appeal to the U. S. Supreme Court to set aside the decision of the Kansas Supreme Court, which sentenced the mine leaders to prison for contempt of court for failure to observe an anti-strike injunction of the Kansas Industrial Court. This case and another case brought by the Kansas coal miners' union against the constitutionality of the Kansas act will be argued in the Supreme Court Feb. 27.

The union contends that the act seeking to create the Court of Industrial Relations is arbitrary, oppressive, unreasonable and unjust discrimination, in violation of the Fourteenth Amendment; that it is a penal statute that is vague, indefinite and uncertain and an unlawful restraint on commerce; it commingles the function of the three great departments of the government; it contravenes the Clayton Act and the Lever Act; it empowers the Court of Industrial Relations to fix wages, hours and working conditions, take over and operate industries, and generally to install a system of state socialism, all in violation of due process.

The void sections of the act are so intermingled with other sections, the union alleges, as to cause the whole act to fall.

January Anthracite Shipments Exceed Those Of December by 212,131 Tons

SHIPMENTS of anthracite during January, 1922, were larger by 212,131 gross tons than during December, 1921, although the total January shipments were 892,485 tons less than in the corresponding month last year, due in part to the continued industrial depression. The January record of 4,848,053 gross tons shows less than 14 per cent decrease from the 1921 average and approximately 5 per cent increase over the final month of last year.

Shipments by originating carriers were as follows, in gross tons:

	January, 1922	January, 1921	December 1921
Philadelphia and Reading	1,052,872	1,172,873	985,262
Lehigh Valley	766,602	1,058,127	801,796
Jersey Central	542,558	470,704	532,597
Lackawanna	744,768	910,260	626,377
Delaware and Hudson	619,762	814,491	654,987
Pennsylvania	331,871	451,879	307,520
Erie	466,495	606,602	450,465
New York, Ontario and Western	101,779	156,564	107,107
Lehigh and New England	221,346	99,038	169,811
Total	4,848,053	5,740,538	4,635,922

WOMEN HAVE BEEN DRIVING men out of the coal mines, but we haven't heard of the ladies preventing men from working in diamond mines.—*Brooklyn Eagle.*

Prepare for 6-Weeks Strike, Says Cushing; Predicts Panic Coal Prices

AT THEIR monthly dinner, Feb. 17, George Cushing told the purchasing agents of Detroit that they should buy enough coal to last during a strike of at least six weeks after April 1. They also were warned to get under contract for two or three years because panic prices are coming again as soon as business tries to become normal.

His view is that the impending strike is inevitable because the burdens of unionism have become intolerable. He prophesies a return of panic coal prices—"1920 all over again"—because the railways can't carry the coal and can't be improved in time to avoid inflation. "The railways are dead—killed by regulation," is the way he put it.

Describing the progress of the union toward the point where it invites war from the operators, Mr. Cushing named these successive steps:

(1) To make wages uniform at adjoining mines, and hence to make competition equal, the operators—years ago—encouraged the formation of a union.

(2) To strengthen the union, the operators—years ago—conceded the closed shop and undertook to collect the union's dues from the miners—granted the check-off.

(3) The miners used the check-off to raise funds in one union field with which to fight a wage battle in another union field.

(4) Wishing to perpetuate their monopoly of labor within a state, the miners—on the plea that it would save precious lives—persuaded several state Legislatures to pass a law saying that no man may work as a miner unless he has a certificate. The law provides that these certificates must be issued by union men only.

(5) Having a monopoly of labor granted by contract and reinforced by law, the miners knew that no strike breakers could be employed. Therefore they now strike periodically to enforce their demands.

(6) By demanding, periodically, increases in pay and getting them through strikes, the miners boast openly that they will cause ownership of mines to become unattractive to capital. At that time the mines will be turned over to the miners, who will work them on a co-operative basis.

(7) They seek national agreements because by striking the whole country on one day the demands will be granted more quickly.

(8) They seek nationalization because: "We can get an increase of 15c. a ton from a fuel administrator in fifteen minutes, whereas we have to fight the operators three weeks to get 3c. a ton.

"You and I know that there are issues to be decided which make a strike inevitable," Mr. Cushing said. "Therefore you men will soon see—unless someone performs a miracle or makes a monumental blunder—300,000 miners throw down their tools until a new wage contract is signed."

Concluding, Mr. Cushing said:

"I mention these things because I want you to know that we—speaking of official America—have decided that the railroads are hopelessly ruined by regulation. If choice must be made—and the day of choosing is not far distant—we will allow the country to drift into the economic doldrums before we will admit that, politically, we made any mistakes by carrying regulation too far.

"Applying all of this to your case, I mean to say: The railroads are dead beyond hope of immediate recovery. They are worse off now than they were two years ago, because they have not been maintained. Beginning at once, the business of the country—the tonnage—will begin rapidly to grow. In a very few months, it will have caught up with what it was in 1920. It will start toward what it should have been in 1921. It will try to catch up with its own actuarial prospects in 1925. Midway in that improvement the growth of the nation's business will stop because the railways will not be available to move what we can produce and sell.

"What that is going to mean to your business and ours seems perfectly obvious. Your factories were rebuilt in major part out of the war profits. They were extended. Our coal mines were multiplied and improved out of war profits. These business units are available and will want to work. The buying power of the people will soon be restored and they will want to buy. Everything will be set for an increase in tonnage, leaving, as customary, a recovery in price to follow more leisurely.

"Then, the railroad blockade will stop midway the growth in tonnage. You and I know what will happen. When we stop tonnage growth without satisfying the demand, prices will begin to rise as buyers begin to compete for what can get through the traffic blockade. We will exactly reverse every lesson of our economic history. It will be the beginning, all over again, of 1920."

New Kenyon Bill Proposes Mining Board To Settle Wages, Hours and Conditions

CARRYING out the recommendations embodied in his report on the West Virginia coal strike, Senator Kenyon, of Iowa, on Feb. 14 introduced in the Senate a bill providing for the settlement of disputes in the coal mining industry by a National Coal Mining Board, to be composed of nine members. The proposed board would have headquarters at Washington, its decisions would be based on a proposed industrial code recently enunciated by the Senator. The members of the board would be nominated and confirmed by the President and serve 5-year terms, three each to represent the coal miners, the operators and the public. The union and operators' representatives would be picked from six nominees suggested by the United Mine Workers and six suggested by the National Coal Association and the Anthracite Operators' Association.

In addition to providing for settlement of labor disputes along the lines followed by the present Railroad Labor Board in adjusting railroad difficulties, the bill would empower the board to investigate questions relating to wages, hours of labor and conditions and regularity of employment, and to institute measures to stabilize the industry and regularize employment. Coal-mining disputes would be taken up by the board on request of the union or operators or on petition of not less than 100 non-union miners or on the board's own motion, and the board would be required to render a decision in a dispute within 60 days after it assumes jurisdiction, unless extended by agreement of the parties.

The bill was referred to the Senate Labor Committee, of which Senator Kenyon is chairman, but it is hardly likely that the Senator will be able to obtain action on it before he retires to become a federal judge, which probably will be about the latter part of February.

Labor Department Report Blames Union for Distress in West Virginia Coal Fields

UNIONISM is the cause of troubles, unemployment and family distress in the West Virginia coal fields, according to the report of the Department of Labor conciliators to Secretary Davis, transmitted to the President. The investigation followed recent reports by union leaders of suffering among the miners and their families. No recommendation is made for government assistance, it being stated that conditions will unravel themselves within a month or 60 days.

"The question of the open shop is the crux of the West Virginia conditions," the report says. "Owing to the dullness of the coal market many men are out of work. As a result of no work there are some cases of poverty and a few cases of destitution. Careful investigation revealed no cases of starvation. No evictions of miners' families have been forced by the mine owners. Some notices were given verbally or orally to families that they would have to move, however, and as a result of these notices 110 families gave up possession of their homes. The companies assured the investigators that there would be no evictions that would impose hardships, although eventually all of their houses would be needed for men working in the mines." Charity is relieving cases requiring need. Many of the miners have resumed work under the 1917 wage scale.

Thick Vein Freeport Operators Announce Wage Reduction of 34 Per Cent for April 1

WALTER L. CALVERLEY, president of the Union Collieries Co. and chairman of the wage-scale committee on the Thick Vein Freeport Coal Operators Association, recently announced that, effective April 1, the wage scale paid in the mines operated by that association would be reduced an average of 34 per cent. The scale will be as follows:

Contract Rates Per Ton of 2,000 Lb., Mine-Run:	
Pick mining in rooms, entries and stumps where pillars are drawn by machine	$0.65
Pick mining in solid pillar work	0.58
Cutting in wide or narrow work	0.071
Loading in wide or narrow work	0.446
Yardage Rates:	
Cutting, entry rates	0.1642
Loading, entry, single shift	0.3960
Loading, entry, double shift	0.5120
Day Wages per 8-Hour Day:	
Motormen	4.60
Motormen's helpers, skilled wiremen, tracklayers, bottom cagers, drivers, trip riders, water haulers, timbermen, shotfirers, skilled pipemen, bratticemen, skilled workmen	4.50
Bottom cagers' helpers, pumpers (except where agreement to pay by the month is in effect)	4.30
Wiremen helpers, tracklayers' helpers, timbermen's helpers, pipemen helpers	4.25
Firemen	4.10
All unspecified inside common labor and dumpers	3.50
Trimmers	3.50
Minimum outside day labor and pushers	3.25
Trappers	2.00

All unspecified dead work, 30 per cent reduction from 1921 scale.

Mr. Calverley stated that as federal Judge Anderson had declared the check-off illegal the association did not consider it necessary to take it under advisement.

Local Wage Scales Predicted for Northern West Virginia and Upper Potomac Fields

FOLLOWING the announcement made a few days ago by the Monongahela Coal Association that there would be a reduction in wages at the 65 or more mines represented in the association, on Feb. 8 notices were posted at the various mines on Scotts Run carrying into effect the announcement and conveying the information that the adjustment would amount to a reduction of from 31 to 54 per cent as compared with the present scale of wages paid. Members of the Monongahela Valley Association are the first to take any action in concert in northern West Virginia, but other associations in the northern part of the state are expected to follow suit between now and April 1 and it is not believed that there will be any effort to hold any conference with the United Mine Workers looking to a new scale.

Although no agreement has been reached between the United Mine Workers and the operators in the Upper Potomac field and although it is doubtful if any such agreement will be reached, the belief is generally entertained that there will be an agreement between the various mine owners in this region and the miners, acting independently of the union, on a scale which will permit the mines or many of them to resume operations, this belief being based on the fact that the union has never been as strongly intrenched in the Upper Potomac territory as in other union fields.

Asks Congress to Probe Coal Mining

A GENERAL investigation of the coal-mining industry is proposed in a resolution introduced in the House of Representatives by Representative Robsion, of Kentucky. He seeks remedial legislation for the present paralyzed condition of the industry and the collapse of the export coal trade. His resolution directs the House Mines and Mining Committee or a subcommittee thereof to investigate the "conditions prevailing in the coal mining industries of the United States, with particular reference to the paralysis of this industry, the cause of Great Britain being able to ship her coal to the United States and the destruction of the export coal trade of the United States; also with particular reference to the state of unemployment in said industry, destitution among miners in this industry, and the condition of the workers in the said industry, and to recommend remedial legislation based upon such investigation.

THE PLACE AT WHICH the annual convention of the National Coal Association will be held will be decided at a meeting of the association's directors to be held in Washington March 2. It is improbable that the date of the convention will be fixed at this meeting of the directors, due to the uncertainties as to the labor situation. It is not probable that the convention would be held with a strike in progress.

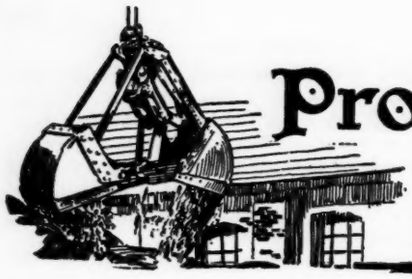
UTAH HAD 3,725 COAL-MINE OPERATIVES when the 1920 census was taken. This compares with 2,318 in 1910.

Wage Scale in Ten Competing Districts with Nine Average and Compared With Present and 1916 Hocking Scale

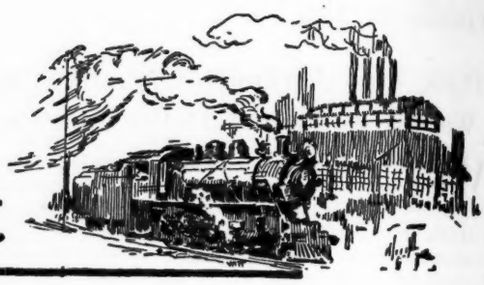
(CONTRIBUTED BY GEORGE M. JONES CO.)

	Hazard No. 4	Hazard No. 7	Elkhorn	Harlan	Northeastern Kentucky	Southern Appalachian	Pocahontas	Tug River	Thacker	New River	Average	Hocking Present	Hocking 1916
Mining rates, per ton:													
Pick mining, run-of-mine	.....	.....	.....	$0.61	$0.55	.....	.....	.....	.....	.....	.....	$1.1164	$0.6764
Machine cutting in rooms	$0.17	$0.11	$0.06	0.12	0.12	.....	.....	.....	.....	$0.1071	$0.1145	0.14	0.0740
Machine cutting in entries	0.17	0.11	0.07	0.13	0.12	.....	.....	.....	.....	0.1071	0.1178	0.1790	0.1024
Loading in rooms	0.60	0.50	0.45	0.49	0.45	.....	.....	.....	.....	0.4732	0.4940	0.80	0.4260
Loading in entries	0.60	0.52	0.48	0.54	0.45	.....	.....	.....	.....	0.4732	0.51	0.9290	0.5194
Inside day labor, per hour:													
Tracklayers	0.56		0.555	0.60	0.58	$0.48	$0.55	$0.55	$0.55	0.57	0.55½	0.9375	0.372
Tracklayers' helpers	0.48		0.475	0.43	0.45	0.43	0.35	0.35	0.37½	0.52	0.43	0.906	0.344
Trappers, boys	0.288		.....	0.25	0.35	0.25	0.25	0.35	.....	0.33	0.32	0.50	0.175
Trappers, old men	.....		.....	.....	.....	.....	.....	.....	.....	.....	.....	0.675	0.20
Bottom cagers, drivers, trip riders	0.511		0.525	0.43	0.54	0.43	0.50	0.45	0.50	0.53½	0.49	0.9375	0.372
Snappers on gathering locomotives	0.511		0.523	0.50	0.54	0.43	0.60	0.45	0.50	0.53½	0.51	0.9375	0.372
Water haulers, machine haulers	0.40		0.475	0.40	0.35	0.40	0.35	0.35	0.37½	0.51	0.40	0.9375	0.372
Timbermen	0.56		0.545	0.60	0.58	0.48	0.55	0.45	0.50	0.51	0.53	0.9375	0.372
Pipemen for compressed air plants	0.48		0.545	0.43	0.58	0.43	0.55	0.45	0.50	0.58½	0.50½	0.93	0.365
Wiremen	0.56		0.545	0.43	0.58	0.43	0.55	0.45	0.50	0.58½	0.51	0.9375	0.372
Motormen	0.56		0.555	0.60	0.58	0.50	0.50	0.50	0.55	0.58½	0.55	0.9375	0.372
Other inside labor, unclassified	0.40		0.475	0.40	0.35	0.40	0.35	0.35	0.37½	0.51	0.40	0.906	0.344
Outside day labor, per hour:													
First blacksmith	0.64		0.605	0.60	0.65	0.50	0.60	0.50	0.57	0.62½	0.59	0.97	0.41
Second blacksmith	.....		.....	.....	.....	.....	.....	.....	.....	.....	.....	0.93	0.37
Blacksmith, helpers	0.448		0.515	0.45	0.40	0.45	.....	.....	.....	0.54	0.46½	0.906	0.344
Carpenters	0.52		0.555	0.48	0.45	0.48	0.55	0.45	0.44	0.57	0.50	0.93	0.37
Dumpers and trimmers	0.48		0.515	0.48	0.40	0.40	0.40	0.40	0.40	0.52	0.44	0.906	0.344
Greasers and couplers	0.28		0.465	0.33	0.35	0.33	0.25	0.35	0.25	0.31	0.32½	0.6325	0.265

The Upper Potomac Coal Association refuses to recognize any scale for that district. The Virginia Coal Operator's Association has no working scale, operators making their own scale adjustments. Logan County, West Virginia has no recognized scale, each operator being free to act in scale adjustments.



Production and the Market



Weekly Review

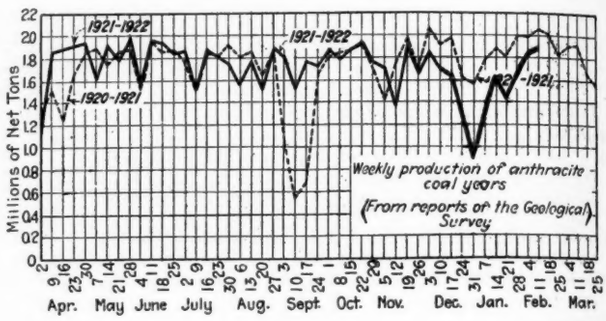
CAUTION and conservation seem to be the guiding influence of the coal buyer lately. The majority of consumers are waiting for clearer indications of the strike emergency before stocking up too heavily. although buying is heavier, the market lacks the snap that characterized it earlier in the month. Business now being done is on a more hesitant basis, as the prospect of a lower delivered price after the wage controversy is settled is too attractive an outlook for the rank and file of buyers to lay in the reserves that the trade is urging upon them.

Smaller Consumers Reluctant to Stock

The major portion of the increasing production is going to the storage piles of railroads and utilities. Smaller consumers are deterred by the developments of the miners' convention from following a like policy. A strike may be short lived, but the idea of taking steps to adequately protect fuel supply is a wise policy. Even though pre-strike prices are likely to be reduced, the difference in cost—which may be termed fuel insurance—is not likely to be heavy; is inconsequential in fact compared with the industrial losses which would be incurred by a long and demoralizing interruption of operations because of a lack of fuel.

Quotations are showing no great tendency to increase. The supply of available coal is still equal to all demands and there is not the slightest sign of a scarcity. Non-union operators point to their portion of the present spot tonnage moving as an indication of their ability to supply the needs of the market in the event of a union shutdown. *Coal Age* index of spot bituminous coal prices stands at 182 for the week ended Feb. 20, as compared with 183 for the previous week.

Good coal-burning weather has enlivened the retail anthracite trade. Dealers' stocks were entirely adequate to care for this increased business and they are reordering very cautiously. Mines are still unable to obtain much forward business and there has been a further softening of domestic quotations. Demand for steam sizes is still good, but heavier production has halted the upward trend of independent quotations.


1921-1922
1920-1921
Millions of Net Tons
Weekly production of anthracite - coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

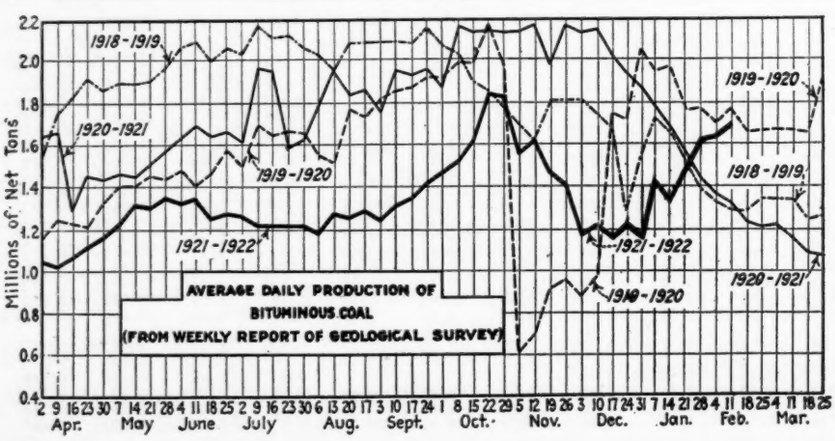
BITUMINOUS

Production of soft coal during the week ended Feb. 11 was 10,326,000 net tons, according to the Geological Survey. This is an increase of 620,000 tons over the preceding week's figure and the highest of the coal year with the exception of last October, when an impetus was felt, due to the threatened railroad strike. The present production rate is sufficient to allow considerable tonnage to flow into reserve. A further increase in output is presaged by early reports of loadings last week.

All-rail movement to New England showed a further increase during the week ended Feb. 11. Shipments were 3,678 cars, as compared with 3,531 cars the week preceding. Railroads are taking more tonnage but the spot market is greatly restricted by the activities of Hampton Roads shippers.

Dumpings for all accounts at Hampton Roads were 295,925 net tons during the week ended Feb. 16, an increase of 40,000 tons from the week before. Bunkers and coastwise tonnage are heavier but the export market stagnation still continues. Accumulations at the piers are increasing, as shippers are anticipating better demands as the strike period nears.

Middle Western markets have shown more activity. Much of the enormous tonnage passing through the Cincinnati gateway has been destined for Chicago, where disposition


1918-1919
1919-1920
1920-1921
1921-1922
AVERAGE DAILY PRODUCTION OF BITUMINOUS COAL (FROM WEEKLY REPORT OF GEOLOGICAL SURVEY)
Millions of Net Tons
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

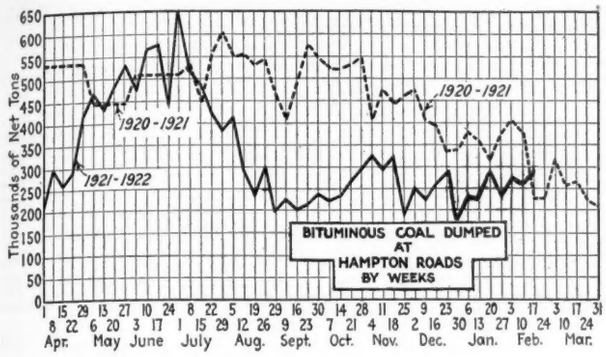
Estimates of Production

(Net Tons)

	1921—1922	1920—1921
BITUMINOUS COAL		
Jan. 28 (*b*)	9,615,000	8,570,000
Feb. 4 (*b*)	9,706,000	8,132,000
Feb. 11 (*a*)	10,326,000	7,859,000
Daily average	1,721,000	1,310,000
Coal year	360,759,000	474,440,000
Daily av. coal yr.	1,358,000	1,779,000
ANTHRACITE		
Feb. 4	1,811,000	1,985,000
Feb. 11 (*a*)	1,822,000	2,048,000
Coal year	74,270,000	77,948,000
COKE		
	1922	1921
Feb. 4	122,000	234,000
Feb. 11 (*a*)	128,000	228,000
Calendar year	705,000	1,505,000

(*a*) Subject to revision. (*b*) Revised from last year.

has been made at low figures. To meet this non-union competition and to induce stocking of retail coal, southern Illinois operators have reduced their domestic prices. Steam coals are in good position and quotations show an upward tendency. Many producers are sold up on steam sizes to


Thousands of Net Tons
1920-1921
1920-1921
1921-1922
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

April 1 and non-union sources of supply are being investigated.

North Atlantic line business is holding fairly well, but Eastern centers report a relaxation in the amount of tonnage closed. Much coal is on the way on consignment and some distress tonnage is likely unless the buying spurt is resumed shortly. In the Northwest the docks are making strenuous efforts to reduce their inevitable carryover, but, aside from a domestic spurt caused by wintry weather, are moving only a slightly increased tonnage.

The number of freight cars idle because of business conditions totaled 467,997 on Feb. 8, compared with 489,842 on Jan. 31, a reduction of 21,845 cars. Of this total, 171,338 represented the number of idle freight cars in need of repairs in excess of the number normally regarded as being in bad order. Surplus coal cars numbered 123,119, or a reduction of 22,794 within the same period.

ANTHRACITE

Production of anthracite continued to increase in the second week of February. The output was 1,822,000 net tons, as compared with 1,811,000 in the week preceding. The better production was made possible by a cold weather spurt in the retail trade, although household buying is still on a hand-to-mouth basis. Retailers are not reordering heavily and April 1 will see stocks at the minimum. Independent quotations are softening, as it is becoming difficult to find a market for all domestic sizes. Steam prices, which have had an upward trend, have been halted, as the increased output has eased the scarcity of steam sizes. However, these coals continue in good demand.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

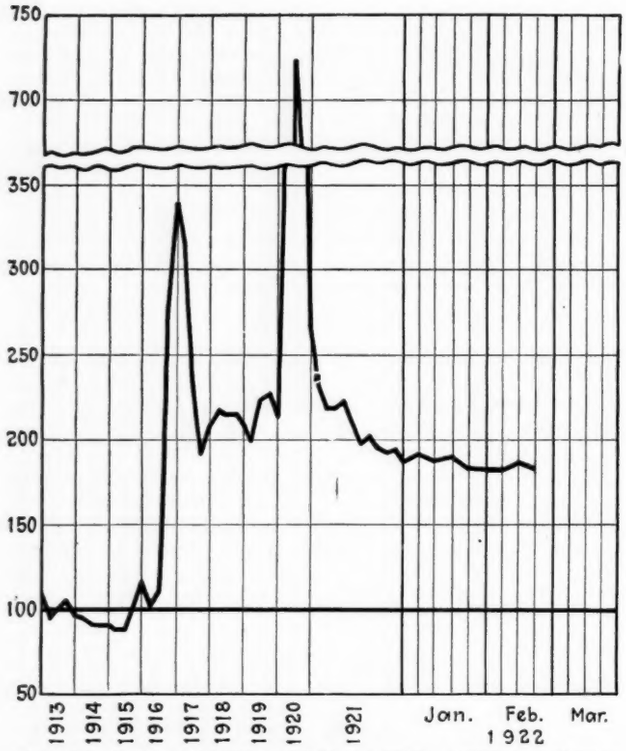
Low-Volatile, Eastern	Market Quoted	Jan. 23 1922	Feb. 6 1922	Feb. 13 1922	Feb. 20 1922†
Pocahontas lump	Columbus	$3.30	$3.25	$3.35	*$3.15@$3.40*
Pocahontas mine run	Columbus	2.15	2.15	1.90	**2.00@2.20**
Pocahontas screenings	Columbus	1.50	1.30	1.40	**1.40@1.65**
Pocahontas lump	Chicago	2.85	3.00	3.15	2.75@3.50
Pocahontas mine run	Chicago	2.15	2.00	2.25	*1.75@2.50*
Pocahontas lump	Cincinnati	2.85	3.15	3.15	3.00@3.25
Pocahontas mine run	Cincinnati	1.90	1.85	1.85	*1.75*
Pocahontas screenings	Cincinnati	1.40	1.20	1.15	1.00@1.25
*Smokeless mine run	Boston	4.70	4.70	4.80	*4.50@4.65*
Clearfield mine run	Boston	1.95	1.95	1.95	1.70@2.25
Cambria mine run	Boston	2.45	2.45	2.45	2.25@2.60
Somerset mine run	Boston	1.80	1.90	1.90	1.75@2.00
Pool 1 (Navy Standard)	New York	3.20	2.85	3.00	2.75@3.25
Pool 1 (Navy Standard)	Philadelphia	3.00	3.05	3.05	2.85@3.25
Pool 1 (Navy Standard)	Baltimore	2.40	2.55	2.60	*2.50@2.60*
Pool 9 (Super. Low Vol.)	New York	2.25	2.35	2.45	**2.20@2.75**
Pool 9 (Super. Low Vol.)	Philadelphia	2.30	2.40	2.45	2.20@2.65
Pool 9 (Super. Low Vol.)	Baltimore	2.10	2.20	2.30	*2.15@2.35*
Pool 10 (H. Gr. Low Vol.)	New York	2.10	2.05	2.10	1.90@2.25
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.00	2.10	2.10	1.95@2.20
Pool 10 (H. Gr. Low Vol.)	Baltimore	1.95	2.00	2.05	2.05
Pool 11 (Low Vol.)	New York	1.70	1.75	1.75	1.65@1.90
Pool 11 (Low Vol.)	Philadelphia	1.70	1.75	1.75	1.65@1.85
Pool 11 (Low Vol.)	Baltimore	1.70	1.85	1.75	1.75
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.45	1.50	1.50	1.40@1.60
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.50	1.50	1.40@1.60
Pool 54-64 (Gas and St.)	Baltimore	1.40	1.45	1.40	1.35@1.50
Pittsburgh sc'd. gas	Pittsburgh	2.65	2.65	2.65	2.60@2.70
Pittsburgh mine run (St.)	Pittsburgh	2.15	2.15	2.15	2.10@2.20
Pittsburgh slack (Gas)	Pittsburgh	1.75	1.65	1.65	1.60@1.70
Kanawha lump	Columbus	2.60	2.65	2.65	2.50@2.80
Kanawha mine run	Columbus	1.65	1.65	1.65	1.50@1.85
Kanawha screenings	Columbus	1.15	1.30	1.35	*1.20@1.40*
W. Va. Splint lump	Cincinnati	2.50	2.55	2.65	*2.25@2.50*
W. Va. Gas lump	Cincinnati	....	2.25	2.00	**1.85@2.25**
W. Va. mine run	Cincinnati	1.40	1.45	1.60	*1.35@1.65*
W. Va. screenings	Cincinnati	1.10	1.10	1.30	*1.10@1.35*
Hocking lump	Columbus	2.60	2.65	2.75	*2.50@2.80*
Hocking mine run	Columbus	1.90	1.75	1.90	1.75@2.00
Hocking screenings	Columbus	$1.20	$1.35	$1.35	*$1.25@$1.40*
Pitts. No. 8 lump	Cleveland	3.00	3.00	3.10	3.00@3.25
Pitts. No. 8 mine run	Cleveland	1.90	2.00	1.95	1.95@2.00
Pitts. No. 8 screenings	Cleveland	1.65	1.70	1.65	1.60@1.70
Midwest					
Franklin, Ill. lump	Chicago	3.65	3.65	3.65	*3.00@3.65*
Franklin, Ill. mine run	Chicago	2.35	2.35	2.50	2.25@2.75
Franklin, Ill. screenings	Chicago	2.05	2.00	1.95	**1.75@2.25**
Central, Ill. lump	Chicago	3.00	3.00	3.00	2.75@3.25
Central, Ill. mine run	Chicago	2.35	2.35	2.35	2.25@2.50
Central, Ill. screenings	Chicago	1.70	1.65	1.75	**1.70@1.90**
Ind. 4th Vein lump	Chicago	3.25	3.25	3.25	3.00@3.50
Ind. 4th Vein mine run	Chicago	2.55	2.50	2.50	2.35@2.65
Ind. 4th Vein screenings	Chicago	1.85	1.85	1.90	**1.85@2.10**
Ind. 5th Vein lump	Chicago	2.95	2.95	2.80	**2.60@3.75**
Ind. 5th Vein mine run	Chicago	2.20	2.25	2.25	2.10@2.40
Ind. 5th Vein screenings	Chicago	1.65	1.55	1.65	**1.65@1.85**
Standard lump	St. Louis	2.75	2.90	2.90	*2.50@3.00*
Standard mine run	St. Louis	1.95	1.90	1.90	**1.85@2.00**
Standard screenings	St. Louis	1.35	1.00	1.05	**1.10@1.25**
West. Ky. lump	Louisville	2.55	2.60	2.55	*2.25@2.75*
West. Ky. mine run	Louisville	1.80	1.90	1.85	1.70@2.00
West Ky. screenings	Louisville	1.05	1.15	1.25	**1.15@1.60**
South and Southwest					
Big Seam lump	Birmingham	2.75	2.90	2.90	2.75@3.00
Big Seam mine run	Birmingham	2.10	1.85	1.85	1.75@2.00
Big Seam (washed)	Birmingham	2.15	2.10	2.10	2.00@2.25
S. E. Ky. lump	Louisville	2.70	2.90	2.75	*2.50@2.75*
S. E. Ky. mine run	Louisville	1.55	1.45	1.65	*1.50@1.65*
S. E. Ky. screenings	Louisville	1.25	1.15	1.15	**1.10@1.30**
S. E. Ky. lump	Cincinnati	2.65	2.90	2.65	*2.25@2.75*
S. E. Ky. mine run	Cincinnati	1.45	1.45	1.65	*1.45@1.60*
S. E. Ky. screenings	Cincinnati	1.05	0.85	1.05	**1.00@1.20**
Kansas lump	Kansas City	4.75	5.00	5.00	5.00
Kansas mine run	Kansas City	4.00	4.00	4.00	4.00
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Feb. 6, 1922 Independent	Feb. 6, 1922 Company	Feb. 13, 1922 Independent	Feb. 13, 1922 Company	Feb. 20, 1922† Independent	Feb. 20, 1922† Company
Broken	New York	$2.61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2.66	$7.00@$7.50	7.75@ 7.85	$7.00@$7.50	7.75@ 7.85	$7.00@ 7.50	7.75@ 7.85
Egg	New York	2.61	7.50@ 7.75	7.60@ 7.75	7.50@ 7.75	7.60@ 7.75	*7.25@ 7.75*	7.60@ 7.75
Egg	Philadelphia	2.66	7.15@ 7.75	7.75	7.15@ 7.75	7.75	7.15@ 7.75	7.75
Egg	Chicago	5.63	7.50*	6.95*	7.50*	7.40*	7.50*	7.40*
Stove	New York	2.61	7.85@ 8.10	7.90@ 8.10	7.85@ 8.10	7.90@ 8.10	*7.75@ 8.10*	7.90@ 8.10
Stove	Philadelphia	2.66	7.75@ 8.15	8.05@ 8.25	7.75@ 8.15	8.05@ 8.25	7.75@ 8.15	8.05@ 8.25
Stove	Chicago	5.63	7.75*	7.20*	7.75*	7.60*	7.75*	7.60*
Chestnut	New York	2.61	7.85@ 8.10	7.90@ 8.10	7.85@ 8.10	7.90@ 8.10	7.85@ 8.10	7.90@ 8.10
Chestnut	Philadelphia	2.66	7.75@ 8.15	8.05@ 8.25	7.75@ 8.15	8.05@ 8.25	7.75@ 8.15	8.05@ 8.25
Chestnut	Chicago	5.63	7.75*	7.20*	7.75*	7.60*	7.75*	7.60*
Pea	New York	2.47	5.00@ 5.75	6.05@ 6.45	5.00@ 5.50	5.75@ 6.50	5.00@ 5.50	5.75@ 6.50
Pea	Philadelphia	2.38	4.75@ 5.00	6.15@ 6.25	4.75@ 5.00	6.15@ 6.25	4.75@ 5.00	6.15@ 6.25
Pea	Chicago	5.63	6.10*	5.60*	6.10*	6.10*	6.10*	6.10*
Buckwheat No. 1	New York	2.47	3.00@ 3.50	3.50	3.00@ 3.60	3.50	*3.00@ 3.50*	3.50
Buckwheat No. 1	Philadelphia	2.38	2.50@ 3.25	3.50	2.75@ 3.25	3.50	**2.75@ 3.50**	3.50
Rice	New York	2.47	2.00@ 2.50	2.50	2.00@ 2.50	2.50	2.00@ 2.50	2.50
Rice	Philadelphia	2.38	1.75@ 2.25	2.50	1.75@ 2.25	2.50	**2.00@ 2.25**	2.50
Barley	New York	2.47	1.50@ 1.75	1.50	1.50@ 1.75	1.50	1.50@ 1.75	1.50
Barley	Philadelphia	2.38	1.00@ 1.50	1.50	1.00@ 1.75	1.50	**1.25@ 1.75**	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.00@ 2.50	.....	2.00@ 2.50

*Net tons, f.o.b. mines. †Advances over previous week shown in heavy type, declines in *italics*.



Coal Age Index, 182, Week of Feb. 20, 1922. Average spot price for same period, $2.20. This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. The result is a series of index numbers, plotted in the above diagram.

COKE

Beehive coke production was 128,000 net tons in the week ended Feb. 11, an increase of 6,000 tons over the previous week. Connellsville operators report a peculiar situation; there is no demand for coal even in the face of a strike, while the coke market is active and the call is increasing. Prices have stiffened all around.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE (a)

(Net Tons)

	Byproduct	Beehive	Total
January	2,278,000	1,137,000	3,415,000
February	1,888,000	865,000	2,753,000
March	1,772,000	575,000	2,347,000
April	1,519,000	328,000	1,847,000
May	1,590,000	300,000	1,890,000
June	1,408,000	232,000	1,640,000
July	1,297,000	180,000	1,477,000
August	1,383,000	248,000	1,631,000
September	1,423,000	289,000	1,712,000
October	1,734,000	416,000	2,150,000
November	1,766,000	477,000	2,243,000
December	1,860,000	514,000	2,374,000
Total 1921	19,918,000	5,561,000	25,479,000
Monthly average	1,660,000	463,000	2,123,000
January, 1922	1,903,000	496,000	2,399,000

(a) Excludes screenings and breeze.

To make the coke produced in January it is est mated that 3,517,000 tons of coal were used, little more than half of what is required when business is most active.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE.

(Net Tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 monthly average	2,625,000	4,354,000	6,979,000
1918 monthly average	3,072,000	4,014,000	7,086,000
1919 monthly average	2,988,000	2,478,000	5,466,000
1920 monthly average	3,684,000	2,665,000	6,349,000
1921 monthly average	2,385,000a	731,000a	3,116,000
October, 1921	2,491,000a	656,000a	3,147,000
November, 1921	2,538,000a	752,000a	3,290,000
December, 1921	2,672,000a	811,000a	3,483,000
January, 1922	2,735,000a	782,000a	3,517,000

(a) Assuming a yield in merchantable coke of 69.6 per cent of the coal charged in byproduct ovens, and 63.4 per cent in beehive ovens.

Foreign Market And Export News

ITALY—Cardiff steam first is quoted at 38s. 9d. on the Genoa market, according to a cable to *Coal Age*. This is a continuation of the increase noted last week, when a price of 38s. was reported.

BELGIUM—The coal market is suffering from a feeling of uneasiness though prices are unchanged. Prices for coke, on the other hand, are firm as the result of heavy demands from France and Luxemburg. Moreover production cannot keep pace with demand.

SPAIN—Resumption of work in the Asturian coal mines has been accompanied by a revival of activity in the coal market. Quotations at the pithead are: Screened, 62 pesetas, large, 59, small gas, 35 and small steam 33. The problem of the future customs duties on coal is causing the government much anxiety. Coalowners are demanding duties which shall compensate for the difference in price between Spanish and foreign coal. At the request of the Associations of León and Palencia the government has granted on all coal or coke despatched by sea the bounty of five pesetas allotted primarily to the Asturian product.

INDIA—The Indian Mining Federation has advocated before the Fiscal Commission the imposition of an import duty on Rs. 5 per ton on coal in order to protect Indian coal against Welsh, Japanese and Natal coals. The coal market is steady. The supply of Bengal coal is inadequate owing to railway difficulties. The rates are: Bengal 1st Rs. 35 per ton; Bengal Good 2nd Rs. 29/8; Bengal 2nd Rs. 27; English coal Rs. 38.

Export Clearances, Week Ended, Feb. 16, 1922

FROM HAMPTON ROADS:

For Canada: Tons
Dan. S.S. Skanderborg, for St. Johns, N. B. 2,583
Am. S.S. Carib, for Bridgetown, N. S. 2,193

For Cuba:
Br. Schr. W. N. Reinhardt, for Santo Domingo 435
Dan. S.S. Maersk, for Nuevitas 1,978

FROM PHILADELPHIA:

For Brazil:
S.S. Otho, for Rosario .....

For Cuba:
Dan. S.S. Olaf L. Kongstad, for Havana ....
Br. S.S. Finchley, for Havana .....

Amount and Value of British Coal Exports, December and Calendar Year of 1913, 1920 and 1921

	December — Quantity (Gross Tons)			December — Value		
	1913	1920	1921	1913	1920	1921
Anthracite	249,496	168,919	221,879	£196,573	£693,140	£525,545
Steam	4,588,444	1,765,959	3,188,391	3,232,360	7,264,081	3,711,596
Gas	980,548	292,991	675,593	637,705	1,101,479	862,403
Household	134,384	10,124	56,615	89,525	47,730	74,437
Other sorts	276,581	64,083	167,684	173,104	238,259	191,980
Total	6,229,453	2,302,076	4,309,162	£4,329,267	£9,344,689	£5,365,961

	Calendar Year — Quantity (Gross Tons)			Calendar Year — Value		
	1913	1920	1921	1913	1920	1921
Anthracite	2,976,389	1,641,190	1,463,668	£2,374,353	£5,400,251	£3,718,767
Steam	53,618,922	20,137,411	18,372,185	37,845,546	82,194,605	30,789,029
Gas	11,527,686	2,204,571	3,740,744	7,154,427	8,682,503	6,795,552
Household	1,769,719	76,059	228,246	1,164,088	235,082	374,448
Other sorts	3,507,402	872,622	855,709	2,188,838	3,114,705	1,273,795
Total	73,400,118	24,931,853	24,660,552	£50,727,252	£99,627,146	£42,951,591

British Prices Stiffen with Heavier Export Demand; Production Continues Good

British production during the week ended Feb. 4, 1922, was 4,803,000 gross tons, according to a cable to *Coal Age*, as compared with 4,739,000 tons in the previous week.

Exports for January were 4,021,000 tons, a substantial increase, when compared with January of a year ago, but about 300,000 tons less than the figure for December, 1921.

South Wales activities are increasing. Inquiries for contracts over twelve months are heard and prices are stiffening. The East Coast market is active and advancing. February is sold up, but so far there is little offering for March.

Quite a number of inquiries continue to come into the Newcastle coal market, where a greatly improved tone is evident. Observers are confident that the worst is now over and that a period of comparative prosperity is ahead.

Inquiries in this district are for gas coals for the Gothenburg gas works, the Bordeaux gas works, the Aarhuus gas works and the Svendborg gas works. The Gothenburg and Aarhuus plants are each asking for 6,000 tons of best Durham during the next two months, and the Svendborg, 2,000 tons of the same variety. The French railroads are in the market for large supplies of coking coals.

Employment in north England is good but influenza has rendered a considerable proportion of miners idle. In Scotland the industry is very active. A feature has been the much improved demand for industrial coals of all kinds for home consumption. The miners are working with a will and are exhibiting far more energy than has been apparent for over a year.

Increased Prices for German Coal

A general increase in coal prices has been decided upon by the Reichs-Kohlenverband and the grand committee of the Reichskohlenrat. The increase on hard coal in the principal basins is 50 to 61 marks per ton and on lignite coal 10.80 to 15 marks per ton, not including tax.

In a statement issued by the management of the Berlin Municipal Gas Works and bearing upon the advantages and disadvantages of the import of British coal, attention is called to the fact that imports would render the increase of Berlin gas prices necessary. German coal is quoted at 635 marks including coal taxes, f.o.b. Berlin, while the corresponding price of British coal is 1,370 marks. If there were any guaranty, the statement proceeds, that the quality of British coal were still the same as before the war, this difference would constitute a less weighty factor inasmuch as gas works are being supplied with large quantities of German coal wholly unsuited for gas production. Unfortunately, British coal of pre-war quality is unobtainable.

French Coal Imports in November, 1921

Coal	Tons
Great Britain	1,064,082
Belgium	254,942
United States	12,362
Germany	512,187
Sarre	1,575,653
Other countries	40,931
Total	3,460,157
Coke	
Belgium	14,478
Great Britain	3,276
Germany	309,578
Other countries	430
Total	327,762
Briquets	
Great Britain	17,508
Belgium	70,715
Germany	37,807
Other countries	57
Total	126,087

Hamption Roads Pier Situation

	Week Ended Feb. 9	Week Ended Feb. 16
N. W. Piers, Lamberts Point:		
Cars on hand	2,760	2,400
Tons on hand	155,953	140,000
Tons dumped	92,576	137,394
Tonnage waiting	16,450	7,090
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,452	1,517
Tons on hand	72,600	75,850
Tons dumped	72,655	75,090
Tonnage waiting	4,473	7,660
C. & O. Piers, Newport News:		
Cars on hand	1,371	1,499
Tons on hand	68,550	74,950
Tons dumped	61,714	51,735
Tonnage waiting	175	.....

Hampton Roads Accumulation Increases

Business was comparatively dull last week with shipments to West Indies and New England still moving but at only a moderate rate. Bunkers were in fair demand, and prices were soft on all grades.

Accumulations were increasing, dealers laying in extra supplies in anticipation of mine strike troubles in other parts of the country. Dumpings for the week, also, were slightly in excess of the week before.

Discontinuance of the Lambert's Point Coal Exchange had no effect on the handling of coal, and dumpings at the N. & W. piers continued to lead in volume.

Evidence of increased business in anticipation was seen in the fact that several concerns here have extended their service, while two new concerns during the week have opened branch offices at this port.

Destination of British Coal Exports, December, 1913, 1920, and 1921

Country	Gross Tons — December Quantity — 1913 Tons	1920 Tons	1921 Tons
Russia	400,315	10,314	12,448
Sweden	379,522	80,582	233,390
Norway	201,951	54,505	147,945
Denmark	294,685	86,462	307,685
Germany	655,841	11,062	158,377
Netherlands	148,598	63,696	371,357
Belgium	140,761	21,164	204,717
France	1,099,553	1,072,515	1,233,993
Portugal	114,212	21,074	41,991
Azores and Madeira	15,273	2,586	4,447
Spain	201,834	74,060	132,211
Canary Islands	92,024	43,375	27,910
Italy	802,488	281,967	494,121
Austria, Hungary	78,728	5,255	.....
Greece	61,042	7,714	15,305
Algeria	107,169	47,094	74,529
French West Africa	6,322	16,753	2,948
Portugese W. Africa	19,187	26,722	.....
Chile	46,523	1,699	112
Brazil	155,208	18,587	56,915
Uruguay	66,143	12,719	49,565
Argentine Republic	380,859	38,646	209,120
Channel Islands	14,636	8,357	14,703
Gibraltar	33,703	65,388	46,555
Malta	78,622	23,578	8,109
Egypt	358,847	97,318	185,606
Aden and Depdnd.	26,664	5,686	10,500
British India	27,189	.....	67,602
Ceylon	26,115	3,706	19,998
Other Countries	195,439	99,492	177,003
Total	6,229,453	2,302,076	4,309,162

Pier and Bunker Prices, Gross Tons

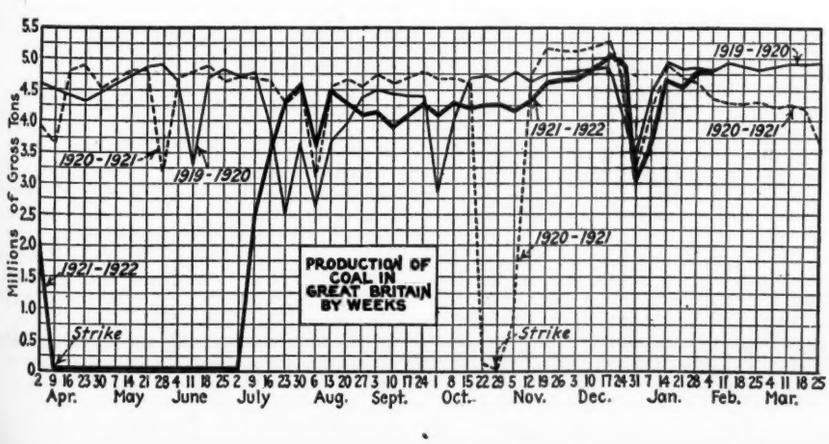
Foreign Bunker Quotations by Cable to Coal Age

	Feb. 11	Feb. 18†
PIERS		
Pool 9, New York	$5.65@$5.90	*$5.45@$5.90*
Pool 10, New York	5.35@ 5.55	*5.25@ 5.50*
Pool 9, Philadelphia	5.50@ 5.70	**5.60@ 5.95**
Pool 10, Philadelphia	5.15@ 5.35	**5.35@ 5.60**
Pool 71, Philadelphia	5.65@ 5.80	**5.70@ 6.05**
Pool 1, Hamp. Rds	4.65	4.65
Pools 5-6-7 Hamp. Rds	4.30	**4.35**
Pool 2, Hamp. Rds	4.40	**4.50**
BUNKERS		
Pool 9, New York	6.00@ 6.20	*5.80@ 6.20*
Pool 10, New York	5.65@ 5.90	*5.60@ 5.85*
Pool 9, Philadelphia	5.75@ 6.00	**5.95@ 6.20**
Pool 10, Philadelphia	5.55@ 5.65	**5.75@ 5.90**
Pool 1, Hamp. Rds	4.75	**4.80**
Pool 2, Hamp. Rds	4.55	**4.60**
Welsh, Gibraltar	38s. f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	55s. f.o.b.	55s. f.o.b.
Welsh, Lisbon	40s. f.o.b.	40s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	40s. t.i.b.	*39s. t.i.b.*
Welsh, Messina	36s. 6d. t.i.b.	36s. 6d. t.i.b.
Welsh, Algiers	35s. f.o.b.	*34s. f.o.b.*
Welsh, Pernambuco	62s. 6d. f.o.b.	62s. 6d. f.o.b.
Welsh, Bahia	62s. 6d. f.o.b.	62s. 6d. f.o.b.
Welsh, Madeira	40s. f.a.s.	40s. f.a.s.
Welsh, Teneriffe	40s. f.a.s.	40s. f.a.s.
Welsh, Malta	40s. f.o.b.	40s. f.o.b.
Welsh, Las Palmas	40s f.a.s.	40s. f.a.s.
Welsh, Naples	....	39s. f.o.b.
Welsh, Rosario	....	52s. 6d. f.o.b.
Welsh, Singapore	....	55s. f.o.b.
Port Said	49s. f.o.b.	*46s. 6d. f.o.b.*
Belgian, Antwerp	30s.	30s.
Alexandria	45s.	*43s.*
Bombay	38 rupees	38 rupees
Capetown	42s.	42s.

Current Quotations British Coal f.o.b. Port, Gross Tons

Cardiff:	Feb. 11	Feb. 18†
Admiralty, Large	24s. 9d.	**25s.@25s. 6d.**
Steam, Smalls	18s. 6d.	18s.@19s.
Newcastle:		
Best Steams	24s. 9d.	24s. 6d.@25s.
Best Gas	22s. 9d.	**23s.**
Best Bunkers	22s. 3d.	**23s.**

† Advances over previous week shown in heavy type; declines in *italics*.


PRODUCTION OF COAL IN GREAT BRITAIN BY WEEKS
1919-1920
1920-1921
1921-1922
Strike
Millions of Gross Tons
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

Cincinnati Gateway

Huge Coal Shipments Enter Cincinnati Gateway

Movement Across Two Bridges Breaks all Previous Records—Open Shop Mines Fill Most of Increased Demand —Prices Not Much Stronger

Tremendous coal shipments have been passing through the Cincinnati Gateway recently. The number of loads moving over two of the bridges has broken all previous records. Much of the low-volatile tonnage was destined to Western markets. The bulk of the improved demand is being filled by open-shop mines.

Notwithstanding the heavier strain on production, prices have not greatly strengthened. Domestic coals are in a weather market, although good grades of smokeless are well booked up. The screenings market is the easiest of the lot, as the fines are coming forward in such quantities as to cause prices to barely hold firm.

CINCINNATI

Public utilities are now strong in the market and both mine run and certain preferred grades and sizes are showing more strength than for months past.

Low-volatile business is confined to the domestic makes—so far as stableness to that market is concerned. In this the most of the companies are booked ahead for two to three weeks and few if any of them are making March prices on lump and egg. Run of mine lags along, though a raft of shipments made to the Western markets has cut down the demand considerably from that quarter. Slack is hard to move and some of it has been sold in quantity below the dollar mark.

Sized gas coal is stronger and certain types of nut and slack have been in excellent demand. The splints have not been so much sought after. This has been a temperature proposition and the colder weather was followed with a heavy make of the larger sizes. There was another upturn to bituminous slack.

Retail business has been solid and encouraging. While orders were small in quantity they made up tonnage in the aggregate. Some companies had to fall back on outside trucks to make deliveries. Prices still range as formerly.

LOW-VOLATILE FIELDS

New River and the Gulf

The New River output now ranges around 30,000 tons daily. Demand is steadier in the West and Eastern markets are also more active. The Tidewater movement has been stimulated by heavier takings for bunkerage and New England.

The demand for Gulf coal is growing, particularly at Tidewater and Inland East markets. Production is estimated at about 60 per cent of capacity.

Pocahontas and Tug River

Pocahontas mines were active most of the week ended Feb. 11. The spot business has been materially increased by the impending strike possibility and certain consumers are stocking more heavily. Although not as active as a few weeks ago prepared demand is sufficient to hold prices firm.

Tug River production is also more satisfactory. More consumers are stocking in order to be prepared in case of a strike. There is a better Eastern demand and particularly a stronger market at Tidewater, although the bulk of the tonnage is destined for Western points.

HIGH-VOLATILE FIELDS

Kanawha

High mining costs and low market prices still preclude much resumption of work in this district. There is some additional business coming in, due to the prospect of a strike and domestic grades have also improved their position lately. The bulk of production, however, is on old contracts which are soon to expire.

Logan and Thacker

Logan production continues to increase, the output running about 50,000 tons daily. Steam users are taking storage coal and domestic grades are fairly active.

Operators are experiencing a little difficulty in securing all the hoppers needed for steam coal transportation and the labor supply is not heavy. Shipments by the river are now going forward, recent rains making it possible to remove some of this accumulation.

Northeastern Kentucky

Purchases are on a larger scale, although domestic demand appears to have subsided a little. However, the general policy of industrial buyers to stock coal against a strike has caused production to increase to perhaps 50 per cent of capacity.

SOUTHEASTERN KENTUCKY

Movement on all grades is better and a large number of mines in the Harlan-Bell fields have been able to run nearly full capacity. Call for domestic continues good, due to cold weather and most of the mines have all the nut and slack business that they can handle. Mine run is still a drug on the market and a very small tonnage is being produced.

Since screenings are becoming scarce, improvement is looked for in the near future on mine run. A few orders are already booked that allow the mines privilege of shipping mine run at a slightly higher price. Quotations remain unchanged.

West

DENVER

The domestic call is better, and this accounts for an increased output of 60,000 tons during the first week in February. Tonnage for the week ended Feb. 4 was 205,000 against 225,000 for the corresponding week in 1921.

Lump bituminous is $5 at the mine against $6 a year ago. The retail price of $10.75 for lump and $10.25 for nut has cut the retailer's margin from $2.50 to $2.35 on Walsenburg, and from $2.65 to $2.40 on Routt.

The mine price on lignite has dropped from $5.75 to $4, with a retail price of $8 instead of $9.75. Second-grade lignite is $3.50 instead of $4, and is selling for $7 retail.

The steam and slack markets are disorganized. Lignite slack has been cut from $4.50 to $3.20, delivered, by the smaller concerns, while the large companies offer their stock on a basis of $2@$2.25, delivered, in Denver. Bituminous slack is bringing $2.50 in the Trinidad district, the retail price having dropped $7.40 to $6.60, while Walsenburg and Routt slack brings $1.75@$2 at the mine and retails for $5.45.

The disorganization of steam and slack markets is due, in part, to the contract for sugar factories. Nine small concerns are supplying the factories in northern Colorado with approximately 50,000 tons of lignite slack at $1.50 @ $1.75 a ton. Heretofore, two large concerns have had the contract, and, according to reports, gave the smaller concerns 50c. a ton for coal that brought them $2.15. Now the large concerns are pushing their slack with a price of 50c. at the mine, refusing to accept the offers of the smaller companies, which have offered them $1@ $1.25 for their tonnage.

KANSAS CITY

Temperature near zero has strengthened the demand. Steam plants are on the lookout for storage coal.

The general impression is that if coal prices are reduced to pre-war basis and freight rates reduced it will go a great ways toward stimulating manufacturing and trade.

Prices f.o.b. mines are as follows: Kansas lump, $5; mine run, $4; nut, $4.50; slack, $2.50; North Missouri lump, $4.75; mine run, $3.50; washed slack, $3.25; raw slack, $2.50@$3; Arkansas lump, $6; mine run, $4; slack, $2.50@$3; McAlester Oklahoma lump, $8.50; nut, $7; slack, $2.50; central Illinois lump, $2.75@$3.25; egg, $2.50; slack, $1.25@$1.40.

SALT LAKE CITY

Retail business is holding up well and some of the big dealers are working overtime although the zero weather has passed. Stocks are very low. Operators are doing better than they were, but high freight rates and foreign competition have seriously interfered with the coast business.

The men who went on strike at the Cameron Coal Co. recently are returning to work on the company's terms.

Anthracite

Output of Hard Coal Gains; Steam Sizes Move Actively

Cold Spell and Improved Retail Distribution Help Production—Independent Domestic Prices Hold Firm—Dealers and Householders Buy Cautiously.

Heavier production of hard coal has followed the cold spell and better retail distribution. Independent domestic prices are holding firm on the favored sizes but all producers find trouble in disposing of pea.

Retail stocks were adequate to handle the spurt and dealers are reordering cautiously. The householder is still buying on a current basis only and this attitude is being reflected by his supplier, making a certainty of good-sized left-over stocks on April 1. The larger output has halted the rush for steam grades, but all sizes are moving very actively.

NEW YORK

Domestic coals are showing more strength. Although stove is the easiest to move there is no sluggishness. Egg coal is once more on the active list. Pea coal remains quiet.

Much of the demand indicates hand-to-mouth buying, both on the part of the dealer and consumer. Cold weather played an important part in last week's business.

During the cold spell the temperature reached the lowest mark of the winter and retail dealers reported active buying of one and two ton lots. In the outlying sections deliveries were hampered by the heavy fall of snow.

Heavier buying by dealers is expected in the early part of next month, but it is not expected that the majority of dealers will endeavor to lay in several months supply in anticipation of a long time suspension of mining after April 1.

It was reported that some of the companies were making concessions on their domestic price schedule in order to keep their coals on the move but this could not be verified last week.

The shortage existing in the steam coals has not resulted in the rush to lay in supplies as might be expected. With operations on a better basis and more of these coals coming forward, the demand cannot be said to be so active.

Buckwheat is the weakest of the steam coals but the better grades show no slump in quotations. Rice coal moves steadily while barley is the most active.

ANTHRACITE FIELDS

Zero weather increased the demand last week. All sizes are moving more readily, the only real sluggishness being in pea and production has moved up a peg.

The threatened strike probably has accounted for some of the increased demand. Even the most optimistic in the coal fields can see nothing but a suspension of at least 30 days from the first of April.

BUFFALO

Decline in demand has occurred from two or three weeks ago, and dealers are holding off, because of large stocks on hand and the anticipation that prices will be lower within a few weeks. Consumers are following the same plan as for some time past of buying anthracite as sparingly as possible, and many are using such other fuel as may be available.

The natural gas pressure has been unusually good this winter, and this substitute and domestic coke have displaced much coal. Offers of independent anthracite continue large and prices on ordinary sizes are weak. The smaller steam sizes are comparatively strong.

PHILADELPHIA

The first zero weather in two years has put old-time activity into the retail trade. Deliveries, however, have been somewhat difficult to make.

The dealers still continue to place limited orders with the shipping houses, although most of them have been increased on account of better trade conditions. Prices are well held by the independents. Pea is not wanted, however, and prices are slipping.

There seems to a noticeable betterment in the financial status of the retailers recently. They seem to have learned a valuable lesson after having granted so much credit during the summer and fall, which tied up much of their capital. Much of this trade has come back recently for refill orders, which with most of their trade lately, has been put on a cash basis, and the urgent need of fuel gave them a favorable opportunity to do this.

Steam sizes are still going good, especially buckwheat and barley. The companies are drawing heavily on storage yard stocks. Independents are getting full company price for buckwheat and barley, but only in occasional instances have they been able to get premiums.

The contract season on steam coals is fast approaching and consumers are anxious to know what stand the companies will take on prices. There is a feeling that with the low soft coal prices and a probable reduction in mining costs, that $3 will be a contract basis for buckwheat. Of course, all of this intimation comes from the consumer.

BALTIMORE

The usual troubles of frozen coal, etc., were encountered last week but the demand was not enlivened. The spell of cold weather brought only a small spurt of ordering.

Of course, left-over stocks, might be a good thing if a strike holds up production this spring, but on the other hand the frequent failure of strikes to materialize has brought many to feel that the present trouble will be smoothed over in some way.

Coke

CONNELLSVILLE

A week ago the coke market was reported with a stiffened undertone, due to operators turning their attention more to coal. In the past few days the market has been subject to actual demand of tonnage importance.

One furnace, just blown in with coke purchased in the spot market, contracted to July 1 at $3.25. An inquiry for prompt furnace brought price of $3.50.

Even at $3.50 coke is hardly as profitable as coal if well sold in the present market, but some operators have not had good channels of distribution for coal and some have had to make one drawing a week of furnace coke, to keep ovens cool, when their regular trade was in foundry coke. The demand for foundry coke has increased farther.

The market is now quotable as follows: Spot furnace, $3.25@$3.50; contract furnace, $3.25; spot foundry, $4 @$4.25.

The *Courier* reports production in the week ended Feb. 11 at 58,000 tons by the furnace ovens, and 33,520 tons by the merchant ovens, making a total of 91,520 tons, an increase of 1,330 tons.

UNIONTOWN

Coal and coke markets in the Connellsville region present a peculiar situation. With the strike threat in the union districts now definitely out in the open coal should be a live subject in this unorganized field. With the steel industry far from out of the woods the coke market should show no unusual signs of activity. Yet the exact opposite is true.

While coal remains comparatively unsalable consumers are combing the region for furnace coke and the price has gone from a minimum of $2.75 to $3 and at present most sales are being made beyond that figure, $3.25 being the maximum.

While the Connellsville region could produce an enormous tonnage if need be, there has been little real activity even in preparing the way although there has been a lot of talk about inquiries for after April delivery. Only small sales are being made on steam coal at $1.30@$1.40 and byproduct at $1.60@$1.80.

BUFFALO

Some dealers have worked up a fair demand for domestic coke this winter, its cheapness recommending it in place of anthracite.

Coke for industrial uses is in very moderate demand and prices are easy at $4.25 for 72-hr. Connellsville foundry, $2.85@$3.15 for 48-hr. furnace, and $2.65@$2.75 for stock, with some domestic sizes $3.75, to which add $3.64 for freight.

Eastern Inland

Rush of Inquiries Fades With Reduced Consumption

Despite Talk of Strike, Lull in Buying Occurs—Lessened Requirements Render Stocks Nearly Ample for Eventualities—Railroads and Utilities Now Principal Buyers.

Despite the strike talk a buying lull has occurred in the Eastern Inland market. Tonnage is in heavier volume than 30 days ago but the recent rush of inquiries has subsided. Caution is prompting good reserves, but low consumption has rendered recently acquired stocks nearly sufficient as a safeguard against any interruption to production.

The major portion of the reserve coal moving is for railroads and utilities. Non-union operators point to their proportion of the present tonnage moving as indicative of their ability to furnish needs over the strike period. Distress coal has disappeared, but prices have not strengthened materially.

CLEVELAND

Coal men in this district are somewhat baffled by the continued pronounced apathy on the part of consumers. For some reason, not exactly clear, the late buying movement has been sidetracked.

Operations are slightly better, it is true, due largely to purchases by railroads and public utilities. Many industrial users are sparring for time. They lack the available cash to tie up in coal and before they make a special effort to do any storing they want to be more clear on the course of their own business over the next few months and to analyze the strike situation.

Industrial managers are hoping that there will be no strike and that if it comes it will be short lived. Operators have just about abandoned hope that a big buying movement will burst forth. Some, however, still cling to the belief that by the middle of March the market will be filled with orders and that prices will go higher. For the moment quotations remain unchanged.

Retail dealers have been helped slightly by an order for 8,000 tons of school coal, distributed among a number of firms. Householders, on the whole are buying sparingly. Pocahontas grades are selling lower. Shoveled lump is now quoted at $9 a ton and mine run at $8.

BUFFALO

Some increase is occasioned by the probability of a strike at the mines, but as stocks held by consumers are generally large, and showing little depletion, trade is far from satisfactory. The car order is the rule.

Arrangements are being made by local sellers to obtain a good supply of non-union coal when it may be wanted. The only fear expressed is that the railroads may confiscate much of the coal shipped, since their supplies are short. This is a feature of the situation which many consumers have not considered, but which may have an effect upon prices.

Prices are showing little change, although competition is severe. Some consignment coal, threatened with demurrage charges, is being sacrificed occasionally. Quotations continue at $2.75 for Youghiogheny lump, $2.50 for Pittsburgh and No. 8 lump, $2.25 for Allegheny Valley and all mine run and $1.50@$1.75 for slack, adding $2.36 to Allegheny Valley and $2.51 to other coals to cover freight.

COLUMBUS

With the probabilities of a strike after April 1 appearing more certain, buying to guard against a suspension of operations becomes more general. The movement has not reached any great proportions in Columbus and central Ohio territory, as it is known there will be a considerable non-union production which will help to relieve the situation.

Buying of steam grades is the best feature at this time and some rather large orders have been booked for shipment the latter part of February and during March. Public utilities are still one of the best features.

Extremely low quotations are not heard of as often as formerly, but on the whole the price list has not been increased. Screenings are stronger and prices have been well maintained at the advanced levels.

Domestic demand is steady but not rushing. Dealers' stocks are not large but with mild weather their trade is not active. Retail prices are rather steady at former levels.

Production has increased slightly under the influence of better buying. The Hocking Valley is running about 30 per cent of normal and Cambridge and Crooksville is estimated at 25 per cent. In eastern Ohio the output is something above the 40 per cent mark.

EASTERN OHIO

That coal is being stored is revealed by the continued upward trend in production. Output for week ended Feb. 11 amounted to 372,000 tons, or about 60 per cent of potential capacity.

Association mines are averaging about 50 per cent of full time. Cumulative figures show that eastern Ohio has produced 1,980,500 tons during the calendar year or about 54 per cent of potential capacity as compared with 51 per cent for the same period last year.

Some new life has been experienced in the retail trade due to the higher rates for natural gas. Many are filling their bins with sufficient coal to carry them through the balance of the winter. Retail yards, however, are well stocked.

According to a survey recently made, it is calculated that within two weeks public utilities, hospitals, water-works plants, etc., will have a minimum of 60 days' supply of fuel on hand, indicating the safeguards they have thrown around their operations.

Spot prices remain at about the same levels, with the exception of a slight stiffening in mine run and lower grades of prepared sizes.

Bituminous coal receipts at Cleveland for the week ended Feb. 11, amounted to 1,814 cars; 1,353 for industrial concerns and 461 for retail yards. This is an increase of 219 cars to industry over the previous week, but only 5 cars increase to retail yards. During the past eight months average weekly receipts have been under 1,000 cars.

PITTSBURGH

Inquiry continues to broaden, but the district is doing only a trifle more business than formerly, price still standing in the way. Open-shop fields, while selling considerably more coal, are securing only a shade higher prices and thus the union Pittsburgh district is not helped materially. For Connellsville steam mine run, $1.50 is now a low price, $1.60 being more common, while a few weeks ago $1.50 was being cut frequently.

Buyers seem to expect a cessation of operations at the union mines April 1, but are very cautious as to price, in making purchases. Operators feel that the scale recently published is offered to the miners individually or to the collective body at each mine, and will not be placed before the national officials of the United Mine Workers.

The market remains quotable as follows: Steam slack, $1.30@$1.50; gas slack, $1.60@$1.70; steam mine run and ordinary gas, $2.10@$2.20; ¾-in., $2.60@$2.70; Panhandle 1¼-in. domestic lump, $2.75@$2.90; high-grade gas, mine run, $2.75@$3.

NORTHERN PANHANDLE

Aside from a growing interest, due to the probability of a strike, market conditions remain unchanged. The output is fluctuating around 60,000 tons daily, a large part of which is for railroad consumption.

DETROIT

While the generally unsatisfactory situation in industrial lines is conceded to be largely the cause of the comatose coal market, other factors are also exerting a retarding influence. Buyers find they are able to supply current requirements by picking up small tonnages in the spot market.

The belief that a reduction in railroad freight rates will be announced in the near future, is causing some buyers to hold back. Even the probability of a strike fails to stimulate buying, as consumers figure that there would likely be a sequential lowering of coal prices. Tonnage from the unorganized districts encourages the expectation that coal will be available when needed.

Three-inch Ohio lump is quoted at $3, 1¼-in. lump, $2.75; egg, $2.25; mine run, $1.90; nut and slack, $1.50@$1.60. Four-inch West Virginia lump is $2.60 @$2.75; 2-in. lump, $2.25; egg, $2; mine run, $1.65; nut and slack, $1.25. Pittsburgh No. 8 1¼-in. lump is $2.35; ¾-in. lump, $2.25; mine run, $2; nut and slack, $1.66. Smokeless lump and egg is $3@$3.25; mine run, $2@$2.15; nut and slack, $1.25.

North Atlantic

Brisk Trading Subsides; Volume of Inquiries Good

Actual Sales Slump Below Expectations —Industrial Consumers Reluctant to Stock up Without Further Evidence of Long Tie-Up—Tidewater Business More Active.

Better trading, which developed earlier in the month, has subsided. Inquiries are still being received in good volume, but actual sales have slumped below shippers' expectations.

The industrial buyer is feeling his way cautiously. The miners' convention at Indianapolis resulting in no demand for an increased bituminous scale, the consumer wants some further indication of a long tie-up before stocking in anticipation of it. Prices are not lower, but closings at the figures recently quoted are more difficult to make. Tidewater business at Philadelphia and Baltimore is more active.

NEW YORK

Line demand for bituminous coal is showing more activity than at Tidewater. Better grades continue to be well sold up.

That some operators and shippers did not benefit by the lesson taught as a result of over-shipments to this Tidewater following the threatened railroad strike of last fall is evidenced here now. There were upward of 2,400 cars reported at the various docks on Feb. 17, much of which was shipped without orders. In addition, there were about 50 loaded boats in the harbor waiting for buyers.

Consumers are not showing any desire to prepare for a suspension of mining and the various reports relative to a shutdown do not tend to excite them. The trade, however, believes that as the threatened suspension draws near consumers will enter the market. At present some shippers are having difficulty in inducing consumers to take their full quota on contract and many requests have been received asking for curtailment in deliveries.

Inquiries regarding contracts are being received in large numbers and in some instances sample cars have been shipped in order to make a test of the coals offered. Some of the large railroads have closed new business at comparatively low figures.

BALTIMORE

There is little satisfaction in the general condition. Prices are weak and uncertain from day to day. The public seems to be becoming more and more convinced that a strike is likely, but except for a few individual spurts in buying this has not tightened the market.

The poor price for even the best steam coals is so low that there is little encouragement for decent preparation. The effect is to turn a number of users of high-grade coal to the taking of ordinary fuels, as they can see not so much difference as formerly in grade. In the Fairmont district the demand for slack has been of such a nature, without a corresponding call for lump, that the operators have been offering screen coals as cheap as the run of mine.

The export movement is showing some improvement. For the first ten days of February there were four clearances, a total of 12,584 tons cargo and 1,610 tons bunker. The entire month of January showed only a movement of five vessels with a total of 19,488 tons cargo and 800 tons bunker.

UPPER POTOMAC

As a result of some private wage agreements, production has been slightly stimulated, although idleness is still general. Prices remain so far below production costs that most plants are debarred from re-entering the market.

PHILADELPHIA

There is a fair demand but no sign of a rush. The recent severely cold weather has had a tendency to increase consumption, but most large users are well fortified by fair reserve stocks.

There has been some show of increased strength in spot quotations, but it seems to have been somewhat artificial, being forced by some shippers who felt that conditions would warrant higher quotations. However, they have not been able to maintain even the slight increase.

There does not appear to be any permanent improvement industrially, as some of the big iron plants in this district which have been making fair progress, have again shown signs of reduced activity. The belief still persists, however, that betterment is just around the corner.

Tide conditions show no change, except that prices are perhaps a trifle stronger, no doubt due to strike talk. There are no large stocks at the piers, but such business that offers, bunker or export, is quickly cared for.

FAIRMONT

There was a slight betterment of conditions during the week ended Feb. 11. The increase in demand was almost wholly attributable to the strike talk. Tidewater shipments were in larger volume but the movement was decidedly irregular. Prices remain virtually unchanged.

CENTRAL PENNSYLVANIA

The desire to stock up with fuel has stimulated production but prices throughout the field remain stable. Some of the mines which have been idle have been working on part time during the first half of February.

In the non-union sections of the field, production has increased more rapidly than in the union sections, owing to the fact that they are able to compete with other fields in the matter of a better price.

Chicago and Midwest

All Branches of Coal Trade Show Increased Activity

Railroads and Utilities Set Example for Smaller Consumers in Storing Steam Coal—Domestic Retailers Replenishing Stocks—Smokeless Sold Off-Price to Avoid Demurrage.

More activity is noted in all branches of the trade. Steam coals are moving better, the bulk of the increase going into storage. Railroads and utilities lead in this movement and, being the largest coal buyers, this policy is significant. It might well be heeded by the smaller consumer with a view to protection against strike trouble. Domestic movement is better, as many retailers have been forced to replace tonnage sold through the recent cold spell.

Heavy shipments of smokeless coals have been sold at off-prices on the Chicago market to avoid demurrage. Southern Illinois prices on prepared sizes have been reduced to meet non-union competition and induce storing. Many operators are sold up to April 1 on steam sizes and buyers are seeking non-union connections.

Domestic coals show considerable activity, as there are many retail dealers who are accumulating a little surplus in the event of a prolonged coal strike. Buying, however, on the part of the retailer is not as general as it might be, particularly in the Northwest, as the retailers in that section know they can depend on the docks to supply, even if the shutdown lasts all summer.

Steam demand is increasing steadily, and many operating companies report that they are sold up on as much steam coal as they can produce between now and the first of April. This being the case, there is a very noticeable tendency on the part of wholesalers to offer their trade steam coals from the non-union fields which have advanced. Steam buyers are influenced very largely by newspapers. For instance, if some of the dailies with wide circulations in the Middle West come out with an article predicting a long strike, the effect of this article is felt immediately and stimulates the steam market, whereas if these same papers publish some news to the effect that the United Mine Workers are showing a more conciliatory attitude, then the demand immediately drops off.

When the Indianapolis convention came out with a statement that they were not going to demand an increase, this news came as a great surprise to the whole trade, who thought that the United Mine Workers would demand a sharp increase as well as perhaps four or five days a week. The trouble between Lewis and Farrington, the president of the Illinois United Mine Workers, is rapidly coming to a showdown.

It is expected that very important developments will come from the joint meeting of some of the Railway Brotherhoods and the United Mine Workers, which took place in Chicago, Feb. 21. After this meeting the country will doubtless know whether or not the brotherhoods are going to cooperate with the miners.

INDIANAPOLIS

Screenings have advanced in price and the general indications are that further increases will be noted as it becomes more apparent there will be trouble around April 1. Industries are watching the situation very closely.

The general tone of the market is firm in spite of little increase in demand. It has become known that many of the larger factories and utilities have anticipated the trouble to some extent and have been laying in reserves for several weeks. The stocks, however, are not nearly sufficient for a prolonged period of idleness on the part of the miners.

ST. LOUIS

Reasonably seasonable weather prevails and domestic business is fairly good for the cheaper grades. The dealers here are pretty well supplied and the only coal going into storage seems to be Mt. Olive and Standard.

There has been a movement of about 75 cars of anthracite, various sizes, here in the last ten days for shortage against a strike. Coke is doing fairly well, everything considered, both gas house and byproduct.

Steam business is picking up and several dealers having steam contracts are getting ready to store coal, figuring on a shutdown of 60 days, while a few others are storing 90 days' supply. Coal is going into storage so slowly that it does not disturb the market.

Country domestic is exceedingly quiet, and the same might be said with regard to steam. Considerable steam has moved through the St. Louis gateway to Kansas City and Omaha and a fairly good Standard tonnage continues to move to Chicago.

CHICAGO

The Chicago market continues in a state of activity. The domestic market, on account of the recent cold weather, is fairly satisfactory. Smokeless coals, however, had a little set-back this week, owing to the fact that one big shipper had nearly sixty cars of mine run on track drawing demurrage. Some of this is still on track, although prices have been cut right to the bone.

It is rumored that the Franklin County operators are going to revise their circular price on lump furnace and small egg to $3.65 per ton, in order to give the retail trade some inducement to stock up before the strike comes.

Kentucky and West Virginia coal, on account of their extreme hardness, have always been popular and now that they are to be had at a low price, f.o.b. mines, which more or less neutralizes the high freight rate, these coals are growing in popularity. Anthracite is in fairly good demand, but there has been no great tonnage on the market.

The steam coal market fluctuates from day to day. The general trend, however, is to higher levels. A great many of the industries in Chicago see a little business ahead and this, combined with the possibility of a shutdown in the Illinois and Indiana fields, has stimulated purchase to a marked degree.

The change for the better in both the steam and domestic markets of Chicago has brought about a very much better feeling and tone to the entire trade. The coal man is now able to see that conditions are on the mend and that normal business in the near future is a reasonable thing to expect.

LOUISVILLE

There is a great deal of uncertainty in the market at this time, with the trade generally afraid of contracts of any kind, and some concerns only accepting small current orders. The big houses are taking business freely for short term or immediate delivery.

Operators are anticipating a stiffening market shortly, and are therefore anxious to hold their tonnage available to take advantage of any upward tendency.

Lump is slow as a result of continued balmy weather, and retailers are cleaning up yard stocks, showing no interest in buying. As a result screenings are scarce and mine run is in better movement.

No big demand is in sight until the Lake movement starts, unless "protection buying against strike" increases considerably over the present level. Right now movement is considerably more active than it has been. While the kind of equipment desired is sometimes a little scarce, there is no car shortage.

General prices today in the field are closer together than for weeks, the cheapest quotation on screenings being around $1, while the stiffest price on lump is $2.75. At that it is hard to find screenings at a dollar, and block is being shaded.

SOUTHERN ILLINOIS

There has been increasing activity in the Carterville field on account of the demand for storage for railroads. While steam business is somewhat spasmodic, it is moving sufficiently well to bring about better price conditions.

Association circular of $3.65 prevails in a way on the lump, egg and nut, but independent prices govern when coal has to move and these range anywhere from $3 on nut to $3.50 on lump and egg. Mine run is slow and $2.75@$2.85 is about the range. Domestic movement is lagging. Working time shows one to four days, while many mines are idle.

In Duquoin and Jackson counties somewhat similar conditions prevail. The Mt. Olive situation has picked up some. Working time is better and prices for screenings are stronger. Railroad tonnage is good.

The Standard field is picking up some for steam and domestic. Railroads are buying some additional coal for storage and screenings have moved up. Steam nut and egg are a little slow. Indications are that all prices will advance shortly. Mines that are working average two to four days a week.

WESTERN KENTUCKY

Demand is more active, and screenings production is being taken up rapidly. Brokers are so sure of a higher market that they are again shipping coal on consignment. Screenings are so scarce that some buyers are now taking mine run, which will have to be crushed in order to use in automatic stokers.

The time is rapidly coming, when some operators may find it necessary to put in crushers. A few years ago western Kentucky had a ready market for lump coal, and was forced to dump screenings. Today there is a steady demand for pea and slack with no increased call for domestic.

Railroads are buying a little more freely, and there is a steady inquiry from industrial concerns for prices, with some orders. The field as a whole is more active. However, it is said that if the strike does not materialize, steam consumers will be fairly well stocked in the early spring, and one of the slowest markets in years will result.

South

BIRMINGHAM

Consumers are showing little interest in the market and there is not much buying in any grade of steam or domestic. It will apparently be some time yet before industry reaches a stride which will create any appreciable increase in the demand for coal. In the meantime orders are confined to the spot market and cover only needs of the immediate future.

Railroads are taking contract coal on a little more liberal basis, which will better the working time at mines holding contract agreements. Otherwise the movement of coal from commercial mines shows lack of improvement. The requirements of the furnace companies, railroads and other utilities are sustaining production on the present basis of around 230,000 tons weekly.

Prospects for better market conditions at domestic operations are not encouraging. Orders come mostly from small dealers who either failed to stock at all or on a small scale, and have been enabled to dispose of such stocks and are taking a few cars off and on as demand necessitates. Dealers with large stocks are clearing their yards as rapidly as conditions will permit and are taking losses in many instances in order to do so. There has been no material change in mine prices the past week.

VIRGINIA

Supplementing the usual flow of contract coal, steam users are adding to their reserve stocks to insure tonnage over the possible strike period. Buying of prepared coals is also more active and production is slowly climbing upward. The increased demand, however, is not affecting prices.

Northwest

Domestic Demand Fitful; Industrial Low, in Northwest

Orders Fluctuate with the Temperature —Only Shipments All-Rail Affected by Strike Talk—Dock Supplies Adequate for All Requirements.

Fitful weather has caused an irregular domestic demand. Orders fluctuate with the temperature. Industrial activity is still at a low ebb while the stocking program against a strike has not been felt, aside from moderate shipments all-rail.

Purchases for reserve are being deferred as dock supplies are adequate. Consumers have no desire to tie up much-needed capital in coal stocks when their source of fuel supply is in an excellent position to make shipments when needed.

DULUTH

Survey of stocks on Duluth-Superior docks has shown that on Feb. 1 the docks contained 4,500,000 tons of bituminous coal and 600,000 tons of anthracite. Railroad stocks are placed at 900,000 tons.

All docks have been busy on the strength of continued cold weather and heavy snows. It is thought that February shipments will come close to those of January if they do not actually exceed them. The month started poorly, but has picked up remarkably.

Youghiogheny and Splint screenings are selling at $4.25@$4.75. The demand this year seems to be greater than ever, due to many large consumers using screenings as a substitute for higher-priced coals.

Anthracite is moving in satisfactory quantities for the first time this winter. Dealers are putting in stocks, where before they were content to order enough to carry them from hand to mouth. Evidently the cold snap and a two-day partial tie-up in the railroads has caused sufficient apprehension of a shortage to make dealers put in stocks.

A big drop in anthracite prices is expected after the first of April and dock men are hastening to get their large supplies off their hands. Soft coal will hold firm, it is thought, as a price readjustment in that has already taken place.

MINNEAPOLIS

There is a sort of rag-time fluctuation to the way coal orders come this winter. When the thermometer goes down, the orders rush in, but the weather has been fitful, with a day or two of cold and a day or two of mild. Orders have kept pace both ways.

The net effect has been to increase the domestic consumption considerably more than was expected a month or six weeks ago. But industrial demands have not been materially affected. Manufacturing in almost all lines has been held down to a minimum for many months and is not greatly increased at this time. Public service plants utilizing water power have been compelled to use more steam than usual because the severe weather has held back the snows and there has been little thawing.

As compared with a year ago, the tonnage moving is better. But against the stocks on hand, the situation is less encouraging than a year ago, despite the mild weather. There will be a liberal tonnage carried over the season in spite of all the increased consumption which the severe weather may bring about.

The all-rail trade has been moderate. It sells heavily to the industrial and steam plant trade and the former has been inactive. The latter has had the advantage of the sharp competition from the dock trade, which has a large tonnage on hand and desires to run it down.

Now and then there seems to be a little business coming in from those who wish to prepare against the coming strike. Even a moderate advance in price as a result of the actual suspension will probably not cause any serious regrets over not buying. For most people seem to feel that they would rather pay whatever price they may have to at the time the coal is needed than to buy ahead of time and save money in so doing.

MILWAUKEE

Frequent spurts of zero weather have served to stiffen the demand for domestic coal, and deliveries have been at a high tension. Soft coal is more active as large industries are accumulating supplies in anticipation of a strike in the spring. Prices are steadily maintained with a seeming lack of competition except in screenings.

The Canal St. hard coal sheds of the Milwaukee Western Fuel Co. were destroyed by fire last week, causing an estimated loss of $150,000. There was about 25,000 tons of anthracite in the sheds, considerable of which was burned. The plant of the Lehigh Valley Coal Sales Co. was slightly damaged.

Coal-Mine Fatalities Fewer, Ratio to Output Higher, Last Year Than in 1920

ACCIDENTS at coal mines in the United States in 1921 resulted in a smaller loss of life than in any year since 1903, according to a report just compiled by the U. S. Bureau of Mines. Information received from all state mine inspectors shows a total of 1,973 men killed, as compared with 2,271 in the preceding year, a reduction of 298 fatalities, or more than 13 per cent. The decrease was due largely to the fact that the bituminous mines were idle much of the year, the total production representing a decrease of more than 23 per cent below 1920.

For every million tons of coal produced the fatality rate for the past year was 3.99, while for 1920 it was 3.52. Paradoxical as it may seem, it is believed that the idleness of the mines during much of the year, while resulting in fewer lives being lost, nevertheless was partly responsible for the increased accident ratio on the basis of production. Underground operations tend to become more hazardous during periods of idleness, because of increased likelihood of roof falls, gas accumulations, etc., as well as a lessening of the morale of the workmen, resulting in more frequent accidents when the men return to work.

Most of the fatalities were, as usual, due to falls of roof and side, and haulage accidents. The year was remarkably free from large disasters, there being but five accidents killing five or more men each, resulting in a total of 34 deaths. These deaths constituted but 1.7 per cent of the year's total of 1,973 fatalities, a lower record than for any year during the past decade.

Newport News Exchange Adds Six New Pools

COAL AGE is in receipt of a letter, dated Feb. 16, from J. F. Shaffer, assistant commissioner of the Newport News Coal Exchange, Inc., Newport News, Va., in which he takes exception to recent reports that the closing of the Sewalls Point Coal Exchange marks the discontinuance of the last of the coal exchanges at the Atlantic seaboard. Mr. Shaffer states that the Newport News Coal Exchange, Inc., which was the first exchange organized at Hampton Roads after the liquidation of the Tidewater Coal Exchange, is still a going concern, and because of the urgent requests of many of its members the directors at meeting on Jan. 27, 1922, not only unanimously decided that the exchange should continue but made definite plans for furthering its activities and usefulness in the interest of the tidewater coal trade.

A revised classification will be ready for distribution about March 1. The principal feature of this new clasification, aside from bringing the classification of the mines up to date, is expansion of the present pools by establishing pools 15, 16, 36, 37, 45 and 46. The purpose of these new pools is to bring about a refinement of the grades of coal by selecting the mines producing by quality and preparation the highest grades and putting them into these new pools. The full inspection force of the exchange will be maintained, both in the field and at the piers.

News Items From Field and Trade

ALABAMA

Forty-five applicants passed the examination at the January session of the state board of examiners held in the office of Chief Mine Inspector C. H. Nesbitt. Certificates of competency were issued to thirty-five first-class mine foremen, five second-class, and five fire bosses.

At a meeting of the creditors of the **Montevallo Mining Co.**, which recently filed a voluntary petition in bankruptcy, held before Federal Referee E. H. Dryer, David Roberts, Jr., connected with the Brilliant Coal Co., was named trustee. The most important matter for the consideration of the court was the offer of the State of Alabama to buy and operate the properties of the bankrupt.

ALASKA

The first shipment of Mantanuska coal since 1906 is now on the sea en route from Anchorage, the Northern coal port, to Seattle. This shipment, although small, is of interest as it indicates a resumption of commercial mining in the Mantanuska district.

CONNECTICUT

At a recent meeting of the **Karm Terminal Co.**, wholesale and retail coal and coke dealers, Bridgeport, it was decided to change the name of the concern to the **McNeil Terminal Co.** Kenneth McNeil, Roderick McNeil and Archibald McNeil, Jr., still remain as officials.

Harris & Gans, coal merchants, South Norwalk, plan to construct a two-story addition at their plant in that city. Plans are being drawn by Architect Arthur S. Meloy, Stratford.

A. H. Powell, wholesale coal dealer, New Haven, is planning the erection of a twelve story business building, to cost about one million dollars, on the corner of Church and Court streets.

ILLINOIS

Creditors of the **Moro Coal & Mining Co.**, will collect but a small portion of their claims from receipts of the sale of the property at Moro, a few days ago. The mine was sold under order of the Madison County Circuit Court after the affairs had been under the control of Louis Pawlica, as receiver for several years. It is said that the indebtedness of the company amounts to between $16,000 and $17,000. The creditors may receive about 30 per cent of their bills.

Bondholders who bought in the Indiana coal railway division of the Chicago & Eastern Illinois R.R. have offered to sell the road to McGuire-Cummings Co., of Paris, for $450,000. The company believes it can operate the division with light equipment and diminished service and it is considering the $450,000 offer.

Fire supposed to be from an old gob pile broke out recently in the mine at Ward, resulting in the death of a pump man, who was suffocated by the smoke during the early morning hours. The mine was sealed the following day for a period of thirty days by state officials. It was recently purchased from **McElvain-Hoy Coal Co.**, of Chicago, by **W. A. Perrine**, of Herrin. It is an old mine with an unfortunate speculative career with owners beyond recollection.

Sale has been made of the Signal Hill Coal Co., and other properties to the **Signal Point Coal & Coke Co.** The mine is located in the Harper Hills near Belleville. Stockholders in the new company, which is capitalized at $35,000 are: Philip H. Cohn, East St. Louis; Elmer Wangelin, Belleville, and M. Greenberg, St. Louis.

The Atlas Coal & Coke Co., Chicago, has been appointed exclusive sales agent for the output of the **Fayette-Jellico Coal Co.**, of Anchor, Ky.

The Peabody Coal Co., of Chicago, is equipping the cages at mines Nos. 7 and 8, Kincaid, with Nolan automatic horn stops.

To assist in the conduct of engineering research and to extend and strengthen the field of its graduate work in engineering, the **University of Illinois** maintains fourteen **Research Graduate Assistantships** in the Engineering Experiment Station. Two other such assistantships have been established under the patronage of the Illinois Gas Association. These assistantships, for each of which there is an annual stipend of $600 and freedom from all fees except the matriculation and diploma fees, are open to graduates of approved American and foreign universities and technical schools who are prepared to undertake graduate study in engineering, physics, or applied chemistry. Additional information may be obtained by addressing The Director, Engineering Experiment Station, University of Illinois, Urbana, Ill.

Following a visit of C. M. Moderwell to the Cincinnati offices of his company announcement was made that **G. Trueman Landberg**, formerly with the Tuttle Coal Corporation, will be associated with the Cincinnati sales forces.

INDIANA

A petition signed by 3,964 voters asking that a municipal coal yard be established in New Albany was presented to the New Albany City Council recently.

The Indiana Fourth Vein Mining Co., has been incorporated with a capital stock of $100,000. Incorporators are George G. Royland, Thomas D. Haskett and Walter S. McCloud.

The United Mine Workers have called off a strike in the Clinton coal field, where 700 miners employed by the **Clinton Coal Co.** have been idle since last October as a result of the discharge of a pumper employed at the Crown Hill Mine. The union has taken the matter up with Phil Penna, of Terre Haute, secretary of the Indiana Bituminous Coal Operators' Association, and has instructed the secretaries of the locals at mines in the Clinton field to instruct their men to return to work, as soon as the Clinton company gets ready to operate its mines.

The Pine Ridge coal mine and a lease on 1,000 acres of land at New Goshen, Vigo County, are to be acquired by the **Binkley Coal Co.**, an Illinois corporation capitalized at $500,000, which has qualified to do business in Indiana. L. G. Binkley, of Chicago, is president of the company.

KENTUCKY

The Nagola-Elkhorn Coal Co., is the name of a new $300,000 coal corporation organized at Whitesburg. Thomas E. Jeffries and others of Huntington, W. Va., are in the corporation. They have taken over the plants of the **Logan-Elkhorn Coal Corporation** at Parsons and Whitaker in the Boone's Fork field and will make improvements in the plants which will enable them to increase production.

The Rockhouse Coal Co., on Rockhouse Creek near Blackey, will make several improvements in their plant this year, which will include the building of a large number of miners' houses. This work will start at once. In the same section the **Dudley Coal Co.**, will make early improvements.

R. H. Heyser, formerly connected with the A. J. King interests in the Logan field, is now superintendent of Majestic Collieries Co., at Majestic.

LOUISIANA

H. E. McCormack of Birmingham, vice-president and general manager of the Pratt Consolidated Coal Co., one of the largest operations in Alabama, heads the **Consolidated Fuel Co.**, organized recently in New Orleans. The new corporation is capitalized at $100,000 and will furnish coal to ships. Branches will be established in Pensacola, and Mobile. Coal will be mined in Alabama, shipped by rail to New Orleans and by barge to Mobile and Pensacola. Other officers of the company are R. J. Milling, president of the Bay City Fuel Co., Mobile, secretary; Frederick Gilmore, representative of the Pratt Consolidated Co., vice-president; R. P. Hyams, New Orleans, vice-president and general manager; H. C. Whitman of New Orleans, vice-president, and Charles Harrington, president of the Harrington Steamship Co., New Orleans, manager.

NEW JERSEY

To provide increased facilities for handling coal at the **Pennsylvania System Coal Terminal**, at South Amboy, the company has put into operation a new "thawing shed." This addition to the South Amboy facilities accommodates twenty cars at one time, and was installed to maintain regular service, especially for public utilities dependent upon this coal terminal for a large amount of their fuel supply. The dumping is done by machines which lift the car and turn it over in order that the coal may run out, the car then being returned by gravity to the yards, from which it is moved back to the mines. There are at South Amboy two coal dumpers, each having a thawing shed, which now places the Pennsylvania system in a position to reduce to a minimum any delays resulting from frozen coal.

NEW YORK

J. C. Pack, of Bluefield, interested in smokeless properties in southern West Virginia, was a visitor in New York attending the meeting of the smokeless operators.

A recent visitor in New York and other Eastern markets was **M. L. Taylor**, of Morgantown, vice-president of the Morgantown Coal Co.

O. Y. Warren has been appointed resident manager of the Empire Coal Mining Co., with offices at 1 Broadway, New York City. Headquarters of the company are in Philadelphia.

The Columbian Rope Co., Auburn, has presented the trade with its usual, attractive calendar for 1922.

To take care of increasing tonnage of anthracite, the **Haddock Fuel Corporation** has made arrangements with **W. H. Bradford & Co., Inc.**, whereby the latter will handle sales to retailers and manufacturers in the New England states, New York City, Long Island and the New Jersey seaboard. The New York office of the Haddock Corporation will be located with W. H. Bradford & Co., Inc., at 17 East 42nd St., New York City.

E. B. Merriam, formerly director of industrial relations, has been appointed executive engineer of the switchboard department of the General Electric Co. Executive headquarters of the department are at Schenectady under the management of J. W. Upp.

W. I. Smith and B. C. Hendrickson for many years associated with Borden & Lovell announce the formation of the firm of **Smith & Hendrickson**, with offices at 11 Broadway, New York City, where they will conduct a general wholesale anthracite and bituminous coal business.

The Braddock Coal Co. has been incorporated, with capital stock of $10,000. The incorporators are George O. Golden of Cumberland, Md., and Ralph W. Archdeacon and Stuart J. Saks of Buffalo. It is a branch of the Braddock Coal Co. of Cumberland and has been in operation in Buffalo some months under the name of the **Archdeacon-Saks Co.**

J. G. Miller, of the Raleigh Smokeless Coal Co., Norfolk, was in New York recently on business.

OHIO

John H. Patterson, pioneer of industrial welfare work, whose activities along that line have attracted world-wide attention, took another philanthropic step on Jan. 1, when he, with other owners of The National Cash Register Co., started the Dayton Foundation Fund. This is a fund to be used for the very highest type of charity and benevolent purposes. The principal of the accumulated fund is to be held as one common trust fund, and the income used for the benefit of the community in such manner and for such purposes as the future may prove to be most desirable. The first contributors to the fund are: Jonh H. Patterson, who gives $137,500; Mrs. H. G. Carnell, $93,750; and Robert Patterson, $18,750.

The foundation plan is not an experimental one. It originated in the mind of Judge Frederick H. Goff, who in 1914 established the Cleveland Foundation. Since that time similar foundations have been established in nearly forty large centers covering all parts of the United States.

T. K. Maher, president Maher Collieries Co., Cleveland, is leaving shortly for a vacation trip to Bellaire, Fla., to join several other prominent Cleveland coal men now sojourning in that section, among them being **A. A. Augustus**, president of the Cambridge Collieries Co., and **Charles E. Maurer**, president of the Glens Run Coal Co.

Papers have been filed with the secretary of state increasing the capital of the **Brown Coal Mining Co.**, New Philadelphia, from $40,000 to $100,000.

The Ohio Mining Co., and twenty-two others in the Hocking Valley district have filed a complaint with the Ohio Utilities commission against the rates charged for electrical current by the Hocking Power Co., The Athens Electric Co., and the Southern Ohio Power Co. The complaints aver that the rates are now at the high point during the war emergency. The companies making the complaint represent a production of 13,950 tons daily.

The Colonial Fuel Co., Columbus, has been chartered with a capital of $25,000 to operate a retail coal business. Incorporators are W. H. Plant, E. E. Plant, L. W. Cargill, L. H. Recob and I. N. Gardner.

In the suit of the **Emmons Coal Mining Co.**, against Herman Everett doing business as the **Western Coal Co.**, Judge John Weld Peck of the United States District Court at Cincinnati has entered a judgment of $14,270 against the Western company. Notice has been given that the case will be carried up to the Circuit Court of Appeals. The decision was based on the non-delivery of coal under contract.

George F. Stahmer, president **Quin Morton** and **H. M. Hall**, vice-presidents, were in Cincinnati recently on business matters at the branch office of the Ft. Dearborn Coal Co., from their homes in Chicago and Charlestown.

J. C. Layne has again taken charge of coal sales for the Eaton Rhodes Co., Cincinnati. **F. P. Colville**, who had charge of the Ashland office of the company is on an indefinite leave of absence. This is in accordance with recent changes which took place in the selling end of this corporation.

Darby Brown, president and general manager of the N. N. Brown Co., Birmingham, accompanied by **George Smith**, his Georgia and South Carolina representative, was a recent visitor to the Cincinnati market.

PENNSYLVANIA

The Schuylkill County commissioners have engaged **W. H. Munroe**, Lackawanna County, to head the work of a revision of the assessment of coal lands of Schuylkill County. The commissioners have determined to increase the tax valuation of the holdings of the coal companies by several hundred millions of dollars, and the engineers working under Munroe will determine the exact amount.

D. E. Ruckman, formerly with the Lake City Coal Co., Cleveland, has recently become connected with the Coal Land Development Corporation, of Pittsburgh.

The engineer of a mine locomotive was killed and two men were injured at the Cranberry colliery of the **Cranberry Creek Coal Co.**, Hazelton, when a locomotive plunged from a trestle 25 feet to a sulphur creek below.

Recent state charters issued at Harrisburg include: **Parkers Landing Coal Co.**, mining and preparing coal, capital stock $50,000; treasurer, Guiseppi Caputo, Pittsburgh. Incorporators: Joseph Pecoraro, Rosario Mineo and Ciacinto Mineo, Parkers Landing. **Marvel & Marvel**, mining, buying and selling coal and coke, Pittsburgh; capital, $25,000, Herbert M. Marvell, Pittsburgh. Incorporators: Herbert M. Marvell, Charles C. Marvel, Syracuse, N. Y. and W. Russell Carr, Uniontown. **Puritan Coal Co.**, mining and selling coal, Mount Union; capital, $30,000; treasurer, O. J. Cassady, Mount Union; incorporators: J. Ward Putt, Huntington; O. J. Cassady and David Caldwell, Mount Union. **Interstate Coal & Coke Co.**, mining coal, manufacturing coke and by-products, Pittsburgh, capital, $25,000; treasurer H. S. Lewis, Pittsburgh. Incorporators: H. S. Lewis, John Robinson, Jr., and A. M. Oliver, Pittsburgh.

A charter has been issued to the **Anthracite Dredging Co.**, Philadelphia, which will dig and dredge coal. It has a capital stock of $200,000 and R. E. Patterson is the treasurer. He with P. Jansen and A. E. Messman incorporated the company.

J. C. Cosgrove, Johnstown coal operator, left recently accompanied by a party of New York bankers for Shreveport, La. The party is making an inspection of the properties of the Invincible Coal Co. and the Louisiana Coal Co. From Shreveport the party is going to Houston, Tex., where the refineries of the Louisiana Oil Co. are located. This company's holdings are producing 25,000 bbl. of oil daily. H. J. Meehan, a member of the Cosgrove company, was recently elected a director of the Louisiana Oil Co. He is accompanying the party.

Mine inspectors and company representatives conferred with Chief Button, of the State Department of Mines, in Wilkes-Barre recently, to discuss methods of extinguishing the fire in the **Red Ash Mine.** The mine was visited, but no decision was reached, though several new methods were proposed. There will be another meeting in March. The fire began in December, 1916, and up to date both flooding and sealing have proved ineffectual, so that there is danger to adjoining properties.

TENNESSEE

Headed by former Governor Harding of Iowa, a syndicate has purchased 13,000 acres of coal land near Pikesville, under the name of **Pocahontas & Sewanee Coal Co.** Members are: Gail Borden, New York; C. J. Kurtz, Chicago; Paul F. Beick, Bloomington; Dr. V. M. Price, Buffalo; J. J. Pitts, Bloomington; C. W. Walker, an Alabama operator and J. O. Kirkpatrick, Pittsburgh operator.

The La Follette Coal & Iron Co., is contemplating the erection of a byproduct coke plant to use 12,000 to 15,000 tons of coal a month. In case the ovens are built most of the coke will be used in the La Follette blast furnace and the gas probably used in a power plant to furnish electric power to local industries and the adjoining coal mines.

UTAH

The U. S. Land Office in Salt Lake City has decided in favor of the State of Utah in the case in which **Cyrus W. Shores** contested the right of the State to select as school land a tract described as the southeast corner of Section 36, Township 12 south, Range 9 east, comprising 160 acres. Mr. Shores held that the land was known to contain coal deposits when it was selected by the State. The State introduced evidence that coal was discovered later. Intervenors in the action were the **Ketchum Coal Co.**, and the **Pleasant Valley Coal Co.**, who purchased the property from the State. The contest was originally filed in 1915. Action on the case had been delayed pending a decision in the Sweet case, then before the Supreme Court.

The prompt action of the Spring Canyon Mine Rescue Association's station prevented what was likely to have proved a disastrous mine fire. The trouble occurred in the mine of the **Carbon Fuel Co.**, at Rains, and was attributed to a gas feeder which is believed to have been set alight by a powder explosion or by electric wires becoming short circuited. According to the report the fire had been in progress behind a screen of smoke some hours before its true nature was determined. No one was hurt although some of the men had narrow escapes.

VIRGINIA

C. L. Massel, manager of the Norfolk office of the Eastern Coal & Export Corporation, has been in Richmond on a business trip.

The Lambert's Point Coal Exchange was dissolved Feb. 15, and the Norfolk & Western will continue to operate as usual, except that coal will be consigned to special dealers instead of to the pools.

Petition of twenty-one shippers using the **Lambert's Point Coal Exchange**, for injunction to prevent the railroad collecting $500,000 in demurrage charges until the Interstate Commerce Commission has passed on the manner in which these charges were fixed, has been taken under advisement by Judge A. R. Hanckel, of the Circuit Court. The shippers will ask, if it is found that the demurrage charges have been properly fixed, that the Interstate Commerce Commission change the tariffs of the railroad.

WASHINGTON, D. C.

The Comptroller General has declined to reverse his former decision of Sept. 21, 1921, in which he refused to allow a claim of $62,154 by the **Coast Coaling & Engineering Co.**, for coaling vessels at New York under Navy contract in 1918. He says no new evidence has been adduced to justify reversing the former decision.

The Treasury Department asks $3,000 additional for fuel for the balance of the year. The 1921 estimate called for $31,844 for coal at $10 a ton. For this year it was reduced to $8 a ton and the $3,000 is requested in addition to the $25,000 previously appropriated.

On behalf of retail coal interests, Roderick Stephens of New York, president of the National Retail Coal Merchants' Association, concluded on Feb. 15, before the House Committee on Mines and Mining, his opposition to the further continuance of the government in the fuel business in the Capital through its agency, the Government Fuel Yards under the Bureau of Mines which supplies government departments in that city with fuel. Mr. Stephens argued that it was not proper for the government to compete with local coal dealers and that this intrusion cost the local dealers considerable revenue. He said that the fuel yards were established as a war emergency and the business should revert to local dealers who had satisfactorily served the government in former times. Director Bain of the bureau argued that the government was assured of a regular supply of coal through the fuel yards and that it obtained more favorable prices through its ability to contract for large quantities at the mines.

WEST VIRGINIA

It has been possible to resume operations at the plant of the **Shamrock Fuel Co.**, in Monongalia County, after a suspension of operations covering an extended period. An interesting point has been raised in connection with the suit in the circuit court of Monongalia County of the **Wilson Brothers Coal Co.**, of Pennsylvania, against the **Davis Coal Co.**, of Morgantown, and that point is whether it is necessary that a plaintiff company having a contract to furnish so much coal shall actually mine that coal and load it on cars and make a tender of the coal before there is a violation or breach of contract. In this particular case, the plaintiff company is seeking to collect from the defendant for more than 22,000 tons at $10 a ton, the plaintiff alleging that the defendant declined to accept any more coal on its contract after the bottom dropped out of the market. It is the contention of the defendant that the plaintiff had not attempted to deliver the coal which was to have been delivered on the cars at the mine according to the contract. He declared that the plaintiff could not charge failure on the part of the defendant to accept the coal because it had not mined the coal and had not delivered it on the tracks in cars, as stipulated in the contract.

Arrangements are being made by **the Eastern Coal Mining Co.**, for increasing the capacity of its mine in Preston County by the installation of additional equipment including cutting machines and screening apparatus.

Under a recent change in the assignment of district mine inspectors, William Moore of District 15, with headquarters at Beckley, will have supervision over the Winding Gulf up to and including Helen, all mines around Beckley and down Piney up to and including Lanark. **M. E. Quenon**, with headquarters at Mullens, will have supervision over the mines from Metalton on the main line of the Virginian, all the mines in Wyoming County being included, and will also have supervision over the mines on the Winding Gulf as far as Mullens. His territory takes in everything including the mines up the Gulf including Amigo, everything on Stone Coal Branch, ending with Princewick. **J. E. Hamilton**, of District 11 with headquarters at Eskdale, has supervision over all of the high-volatile mines in Raleigh County.

The principal office of the following corporations has been changed as indicated: **Birch Fork Coal Co.**, from Beckley, to Charleston; **Manhasset Coal Co.**, from Charleston, to New York; **Bailey Fuel Co.**, from Charleston, to Toler, Ky.; **Sudduth Fuel Co.**, from Charleston, to Stone, Ky.

The following West Virginia coal corporations have dissolved and gone out of business: **Fred Mullens Coal & Coke Co.; Triangle Coal Co., Glady Creek Coal & Coke Co.; Marrowbone Coal Co.; Eagle Collieries Co.; Letcher Coal & Coke Co.**, the last named being dissolved by deed of sale.

Coincident with the purchase by the Consolidation Coal Co. of the property and mines of the Carter Coal Co. in Virginia, West Virginia and Kentucky, announcement was made of the appointment of **F. K. Day**, who has been district superintendent of the Clarksburg district in which capacity he was also the personal representative of the general manager, as general manager of the new division of the company necessitated by the acquisition of the Carter company. Mr. Day has been connected with the company for the last fourteen years, having first become identified with it as a member of the engineer corps in the Maryland and Pennsylvania divisions.

T. H. Wickham, who is identified with several of the important mining companies in Raleigh County, has departed for a cruise of the Mediterranean and a tour of southern Europe, expecting to be absent from his office for a period of two months. With him on the trip was Mrs. Wickham.

Alleging mismanagement of the affairs of the **Barbara Mining Co.,** William D. Woodruff, of Pittsburgh, principal stockholder of the company, succeeded early in February in having the circuit court of Monongalia County appoint receivers for the company and issue a restraining order to prevent creditors of the company from interfering with the property. The court, upon agreement between counsel for opposing sides named James H. McGrew and Millard R Sisler as receivers, a bond of $5,000 being executed. It is recited in Mr. Woodruff's bill of complaint that the stock of the company is held as follows: Woodruff Coal & Iron Co., 676 shares; Charles E. Craig, 50 shares; R. H. Jamison, 5 shares; Francis R. Woodruff, 5 shares; George J. Mechau, 1 share; A. M. Davis, 5 shares; and William W. Woodruff, 1,312 shares. The management of the property had been left to an engineer under whose management the affairs of the company became so involved that it cannot pay its obligations. The plaintiff contends that if the property were put up at a forced sale it would involve a sacrifice of the holdings of the stockholders.

There has been acquired by F. E. Strickler of Kingwood, a tract of 250 acres of Bakertown coal in Preston County, which the purchaser is planning to develop in the near future or at such a time as market conditions justify it. This coal will probably be taken out through the Mary Mine, already in operation.

Improvements long contemplated by the **Slab Fork Coal Co.** are to be made in the near future. All arrangements have been made for the construction of a steel tipple at Slab Fork, to be completely equipped in every respect. W. Gasten Caperton is general manager and the improvements will be made under his direction.

Announcement has been made by the Consolidation Coal Co. of the appointment of **Walter J. Davis** as superintendent of Mine 56 of the Consolidation company at Baxter and Mine 97 at Rivesville. Mr. Davis succeeds **Charles E. Potter,** resigned. Mr. Davis' entire mine career has been with the Consolidation company.

A. C. Finley, superintendent of the Gilmer plant of the Davis Colliery Co. was a recent visitor at the general offices of the company in Elkins.

Both **W. L. Zinn** and **L. E. Albright,** who operate mines at Reedsville, have been elected members of the city council of Morgantown, W. Va.

Statement was recently made by the **West Virginia-Pittsburgh Coal Co.,** a large concern operating mines in Brooke County, of its intention to operate its various mines as it saw fit and without reference to attempted control by any outside organization. This company has heretofore operated its mines under an agreement with the United Mine Workers but states that it is no longer able to do so and at the same time meet competition.

ONTARIO

S. B. Coolidge, vice-president of the Clarkson Coal & Dock Co., Cleveland, was a recent caller on the coal trade in Toronto.

M. A. Conrad, manager of the Pittsburg office of the F. A. Fish Co., Ltd., Toronto, spent a few days at the head office of the company in Toronto recently.

H. A. Harrington, of the Coal Exchange of Canada, has issued a statement setting forth the possible effects of the threatened strike of United States miners. If the strike is long continued he claims that the people of Ontario, are likely to suffer next winter. Dealing with the consumption of coal this winter, Mr. Harrington states that in the smaller communities consumption has been above that of last year and on March 31 stocks on hand will not exceed one week's supply.

Trade Literature

Morrow Shaking Screens.—The Morrow Mfg. Co., Wellston, Ohio. Pp. 32; 8½ x 11 in.; illustrated. A description of the plant wherein the Morrow Mfg. Co. has installed the equipment.—Advertiser.

The Montgomery Coal Washer.—Montgomery Coal Washing & Mfg. Co., Birmingham, Ala. Book 43. Pp. 23; 6 x 9 in.; illustrated. Description of the Montgomery jigs, with analyses of washed and unwashed coal.

Chart Classifying Mine Gases—Hughes Brothers, 414 W. 9th Ave., Scranton, Pa.—Advertiser.

Lightning Arresters — Bulletin No. 183, Electric Service Supplies Co., Philadelphia. Contains 62 pages of material describing "Keystone" Expulsion Type and "Garton-Daniels" Lightning Arrester for central station, line, transformer, railway and mine protection.

Self-Cleaning Attachment for Carbide Lamps—Jacobson & Turja, Hancock, Mich.

Traffic News

The Ohio Utilities Commission has issued an order requiring the Hocking Valley Railway Co., to reduce its rates on short-haul car lots of coal shipped from the Hocking Valley district to nearby points. The reduction is from 84c. to 57c. for haul of ten miles or less; and all above eleven miles to 67c. Former rates were held to be excessive and unreasonable.

Purchasers of the **Tennessee Central Ry.** are said to be considering favorably the possibility of extending the western division of the road from Hopkinsville, Ky., to Paducah, a distance of seventy miles, to connect with the Burlington.

In the complaint of the **Baumont Chamber of Commerce** an examiner recommends that a car of coke shipped in 1919 from Chaison, Tex., to Lake Charles, La., was misrouted and awards the complainant reparation because of overcharges.

A request has been made to publish specific rates on bituminous coal, carloads, from all producing districts, to Dearborn, Mich., on the same basis as at present are published to Inkster, Mich., Dearborn, Mich., being eliminated from Detroit Switching District, effective Dec. 15, 1921.

The Ohio Utilities Commission has ordered that the hearing on the question of the reasonableness of coal freight rates on intrastate shipments shall be started Feb. 28. The hearing was requested recently by Governor Harry L. Davis, who desires to stimulate coal production in the Buckeye State. All Ohio roads have been notified of the date and asked to be ready to present their side of the question.

In the complaint of the **George B. Newton Coal Co.,** an I. C. C. examiner recommends that charges for the movement from Angora to Paschal and 52nd Sts., points in Philadelphia, of certain carloads of anthracite originating in Pennsylvania mines, were illegal.

In the complaint of the **Hood Coal Co.,** an examiner recommends that in connection with the transportation of coal from mines between Shinnston and Bingham Junction, W. Va., to points in other states, the Monongahela Power & Ry. Co., an electric line, is a common carrier subject to the commerce act, and that the present carload combination rates are not unreasonable or unlawful, and joint rates refused.

The Indiana State Farm, of Putnamville, Ind., complains against unreasonable rates on 42 cars of coal from Seelyville, Ind., to Putnamville.

In the complaint of the **Oxford Paper Co.,** the I. C. C. decides that the rates on bituminous and small sizes of anthracite from points in Pennsylvania and from Fairmont, W. Va., to Rumford and South Brewer, Me., are unreasonable.

The United Paperboard Co., of New York, has complained to the I. C. C. against alleged unreasonable rates on anthracite from Delaware & Hudson mines in Pennsylvania to Thomson, N. Y.

The Hamill Coal & Coke Co., and others, of Bluefine, W. Va., in a complaint to the I. C. C. allege unreasonable rates on coal from points in Maryland to points in West Virginia, Virgina, District of Columbia, Ohio, Indiana, Illinois, Pennsylvania, New York, Delaware, New Jersey, Connecticut, Rhode Island, Massachusetts and other States and to Canadian points. The complaint requests establishment of joint through rates on the Cumberland-Piedmont and Myersdale group basis in lieu of the present combination rates.

Request is being made for the application of same rates on bituminous coal, carloads, from mines on the D. T. & I. R.R., in Ironton, Ohio, District, as apply from mines on the D. T. & I. R.R., in the Jackson County, Ohio, District, to all points to which rates are now published by D. T. & I. R.R. in Agent Davis' Tariff I. C. C. 811.

The Lion Coal Co., Ogden, Utah, has filed suit against the O. S. L. Ry. for $932.76, alleged freight overcharges on slack coal shipped over a year ago. It is alleged that $2.40 per ton was charged and that the correct rate should have been but $1.80.

Association Activities

Clarksburg Coal Club

Not only questions of local interest but of general interest as well were touched upon at the meeting of the Clarksburg Coal Club held a short time ago. A feature of the meeting was the attendance of many oue-of-town operators. General conditions were discussed by James Williamson of the Maryland Coal Co. T. J. Parrish, who in addition to being an operator is also a member of the council of the City of Clarksburg discussed conditions in the Clarksburg field. President A. Lisle White, of the Northern West Virginia Association told of the meeting of the National Coal Association in New York during the second week of February.

Obituary

John O'Reilly, formerly a well-known business man in Toronto where he was branch manager for P. Burns & Co., wholesale coal dealers, died a few days ago in Buffalo. The remains were interred in Toronto.

Alexander C. Waldie, a well-known coal dealer in Toronto died at his home in that city recently. At an early age he joined the staff of C. J. Smith & Co., coal dealers and when the Standard Fuel Co. was founded, the C. J. Smith Co., was united with it and Mr. Waldie was appointed to a responsible position with the new organization. He was with the Standard company for 34 years.

Coming Meetings

New England Coal Dealers' Association will hold its annual meeting March 22 and 23 at Springfield, Mass. President, W. A. Clark, Milk St., Boston, Mass.

Northwestern Pennsylvania Coal Operators' Association will hold its annual meeting Tuesday, March 7, at the Wm. Penn Hotel, Pittsburgh, Pa. Secretary, T. F. Diefenderfer, Butler, Pa.

Tri-State Coal Stripping Association's annual meeting will be held March 2 at Wheeling, W. Va. Secretary, G. A. Blackford, Wheeling.

Society of Industrial Engineers will hold its national spring convention at the Hotel Statler, Detroit, Mich., April 26-28.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 1, 2 and 3 at Ottawa, Canada. Secretary, G. C. Mackenzie, Drummond Building, Montreal, Quebec, Canada.

National Association of Purchasing Agents will hold its seventh annual convention at Exposition Park, Rochester, N. Y., May 13-20. Secretary, S. C. McLeod, 130 W. 42nd St., New York City.

National Foreign Trade Council will hold its annual meeting May 10-12 at Philadelphia, Pa.

Upper Potomac Coal Association will hold its annual meeting March 6 at Cumberland, Md. Secretary, J. F. Palmer, Cumberland, Md.

Mining Society of Nova Scotia will hold its annual meeting May 15, at Sydney, N. S., Canada. Secretary, E. C. Hanrahan, Sydney, N. S.